

Mark L. Reed, Esq. Director, Public Affairs 800 Boylston Street Boston, Massachusetts 02199 617-424-2242

February 27, 2003

Mary L. Cottrell, Secretary Department of Telecommunications and Energy One South Station, 2<sup>nd</sup> Floor Boston, MA 02110

RE: <u>Boston Edison Company d/b/a/ NSTAR Electric</u>, D.T.E. 03-13

Dear Ms. Cottrell:

Enclosed please find the Annual Service Quality Report (the "SQ Report") for Boston Edison Company d/b/a/ NSTAR Electric Company ("Boston Edison" or the "Company"). The SQ Report sets forth the Company's performance results for the year ending December 31, 2002, under the service quality plan (the "SQ Plan") that was approved for the Company by the Department of Telecommunications and Energy (the "Department") on December 5, 2001.

As the set forth in the SQ Report, the Company's performance in 2002 showed substantial improvement from the performance results previously reviewed by the Department for 2001. These improved performance results are a direct effect of the Company's efforts to improve the reliability of electric service to customers, which have included substantial electric-system upgrades and reinforcements and new and improved functionality of critical information systems. In comparison to 2001, these efforts have reduced customer outage hours by 43 percent, shortened the average duration of individual customer outages by 32 percent and lengthened the average time span between outages by 16 percent.

In 2002, the Company met or exceeded all of the established performance benchmarks, and therefore, ended the year in a net offset position. NSTAR Electric looks forward to continued success in 2003.

Should you have any questions or need additional information, please do not hesitate to contact me. Any communications should also be directed to:

Robert J. Keegan Cheryl M. Kimball Keegan, Werlin & Pabian, LLP 21 Custom House Street Boston, MA 02110 TEL: (617) 951-1400

Thank you for your time and attention to this matter.

Sincerely,

Mark Reed

## **DTE 03-13**

## **Boston Edison Company**

## **Annual Service Quality Report**

## **SECTION ONE**

Year Ending December 31, 2002

DTE FORM - B



#### **FORM B (Electric Companies)**

Boston Edison Company 28-Feb-03

PENALTY PROVISIONS	Years in Database	Mean and Benchmark	Performance in 2002	Comments
Telephone Answering Factor (%)	7	63.09% (+/- 11.48%)		Telephone statistic based on Calls Handled within 20 Seconds.
Emergency Answering (%)	NA	NA	79.60%	Tracking emergency calls started in 2002.
Non-Emergency Answering (%)	NA	NA	75.13%	Tracking non-emergency calls started in 2002.
Service Appointments Kept (%)	0	NA	88.30%	Tracking service appointments started in 2002.
Meter Reads (%)	6	90.11% (+/- 4.89%)	92.92%	
Consumer Division Cases (Cases/1000 customers)	10	1.540 (+/- 0.400)	1.786	
Bill Adjustments (\$/1000 customers)	10	\$224.29 (+/- \$77.49)	\$198.80	
SAIFI	5	1.105 (+/- 0.160)		Exclusions based on events affecting 15% of service areas under historical methodology.
SAIDI	5	107.00 (+/- 23.08)		Exclusions based on events affecting 15% of service areas under historical methodology.
Lost Time Accident Rate (# of acc/200,000 employee hours worked)	10	0.92 (+/- 0.25)	0.94	

#### **FORM B (Electric Companies)**

Boston Edison Company 28-Feb-03

ADDITIONAL REPORTING	Years in Database	Mean and Benchmark	Performance in 2002	Comments
Staffing Levels	6	Union 1693 Management 681	Union 2324 Management 889	
Restricted Work Day Rate (# of acc/200,000 employee hours worked)	9	3.96	2.83	
Property Damage > \$50K (#)	1	NA	0	
Line Loss	10	6.1%		Performance in 2002 is estimated pending filing of FERC FORM 1.
Capital Expenditures (# of projects and total \$)	10	\$111,195,600	314 \$215,522,000	
Spare Component & Inventory Policy	NA	NA	. NA	
Customer Surveys (scale 1-7):				
Random (Overall Customer Satisfaction Survey)	1	NA	80.2%	
Callers (Post-Transaction Survey)	1	NA	81.6%	
Customer Service Guarantees (#; total \$)				
# of Payouts	1	NA	14	
\$ of Payouts	1	NA	\$350	

## DTE 03-13 Boston Edison Company

# Annual Service Quality Plan Performance Report SECTION TWO

Year Ending December 31, 2002

Historical Performance Data



#### **SECTION 2**

## Boston Edison Company Performance Review for Year Ending December 31, 2002

#### I. Introduction

On December 5, 2001, the Department of Telecommunications and Energy (the "Department") approved a Service Quality Plan (the "SQ Plan") for Boston Edison Company d/b/a/ NSTAR Electric ("Boston Edison," or the "Company"). In accordance with the terms of the SQ Plan, Boston Edison filed its first annual service-quality report on March 1, 2002. That filing established the benchmarks (using data through 2001) against which performance in the 2002 calendar-year period would be measured. In this section (Section 2) of the filing, the Company reviews: (1) the historical data underlying those benchmarks; (2) the performance results for 2002; and (3) the comparison of 2002 performance results to the established benchmarks. Items (2) and (3) are provided in this section at Schedule 1, at page 1. Item (1) is provided in Schedule 1, at page 2.

In <u>Section 3</u> of this filing, the Company has provided documentation for the reliability and safety requirements that are subject to the reporting requirements of the SQ Plan.

Also in Section 3, the Company has provided updated historical performance data through December 31, 2002. Based on this data, the Company has calculated the benchmarks that will be applied to evaluate 2003 performance data in next year's filing. In that regard, the Company has recalculated benchmarks for three measures for which there was less than the requisite level of data as of December 31, 2001. For these three measures, the benchmarks applied next year are calculated using data through December 31, 2002. As provided by the SQ Plan, benchmarks that were calculated using the requisite level of data as of December 31, 2001, are fixed for the period of the SQ Plan. The fixed and updated benchmarks for 2003 are set forth in Appendix 12.

Specifically Section 3 contains the following:

- Appendix 1: Customer Surveys
- Appendix 2: Customer Average Interruption Duration Index
- Appendix 3: Restricted Work Day Data
- Appendix 4: Annual Line Loss Data
- Appendix 5: Damage to Company Property In Excess of \$50,000
- Appendix 6: Excludable Major Events
- Appendix 7: Tree Trimming Policy

- Appendix 8: Capital Expenditures
- Appendix 9: Spare Component and Acquisition Inventory Policy
- Appendix 10: Poor Performing Circuits
- Appendix 11: Staffing Levels
- Appendix 12: Updated Historical Data and Calculation of Benchmarks for 2003 Performance

#### II. Performance Review for Year Ending December 31, 2002

#### A. <u>Customer Service and Billing Performance Measures</u>

#### 1. <u>Telephone Service Factor</u>

For the Telephone Service Factor, the Company is required to track and report data on the percentage of telephone calls from customers that are handled within a 20-second time interval, including both emergency and non-emergency calls. Boston Edison began collecting data based on the percentage of calls answered within 20 seconds in 1995. Based on available data through 2001, the Company's benchmark for this measure is 63.09 percent. In 2002, the Company handled 76.04 percent of calls within 20 seconds, which generated an offset for the Company.

Because the 2002 performance benchmark calculated for the Telephone Service Factor was based on less than 10 years of historical data, the Company has updated this benchmark to include 2002 performance. As shown in Appendix 12, the benchmark against which 2003 performance will be measured has increased from 63.09 percent to 64.71 percent.

#### 2. Service Appointments Met as Scheduled

As of January 1, 2002, the Company instituted a system to compile statistics on the percentage of service appointments met by Company personnel, excluding appointments missed by the customer. A "service appointment" is defined as a mutually agreed upon arrangement for service between the customer and the Company where the arrangement specifies the date for the Company's personnel to perform a service activity that requires the presence of the customer at the time of the service. The Company will continue to update the data annually in accordance with the Department's guidelines, and will establish the benchmark when three years of data become available. As detailed in Appendix 12, the Company met 88.30 percent of its service appointments as scheduled in 2002.

#### 3. <u>On-Cycle Meter Readings</u>

Boston Edison is required to report on the percentage of meters that are actually read by the Company in accordance with the meter-reading cycle. Based on available

data through 2001, the Company's benchmark for this measure is 90.11 percent. In 2002, the Company achieved 92.92 percent of on-cycle meter reads, which is within one standard deviation of the benchmark.

Because the 2002 performance benchmark calculated for On-Cycle Meter Readings was based on less than 10 years of historical data, the Company has updated this benchmark to include 2002 performance. As shown in Appendix 12, the benchmark against which 2003 performance will be measured has increased from 90.11 percent to 90.51 percent.

#### B. Customer Satisfaction Performance Measures

#### 1. Consumer Division Cases

The Company is required to measure its performance in relation to the number of customer-complaint cases filed with the Department's Consumer Division. Based on the 10 years of data provided to the Company, the performance benchmark shown on Schedule 1 is 1.540, which will remain fixed for the duration of the service-quality plan. In 2002, the number of Consumer Division cases was 1.786, which is within one standard deviation of the benchmark.

#### 2. <u>Billing Adjustments</u>

The Company is required to measure its performance in relation to the amount of revenue adjustments that result from the Department's intervention in a billing dispute with a residential customer. This is based on data that is compiled and reported by the Department and then provided to the Company. Based on the 10 years of data provided to the Company, the performance benchmark shown on Schedule 1 is 224.29, which will remain fixed for the duration of the SQ Plan. In 2002, the number of Billing Adjustments was 198.80, which is within one standard deviation of the benchmark.

#### C. Safety and Reliability Performance Measures

## 1. <u>System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency ("SAIFI")</u>

The SQ Plan requires the Company to track and report SAIDI/SAIFI statistics and to base the benchmark for this measure on the most recent five years of data. Under the SQ Plan, SAIDI and SAIFI are calculated with the exclusion of "Excludable Major Events." One criterion for an Excludable Major Event is that it be an unplanned interruption of service to 15 percent or more of the Company's customers in an "operating area." The Department has defined "operating area" to mean the Company's entire service territory. The Company's historical SAIDI/SAIFI statistics are based on the exclusion of major events defined as events that affected a significant number of customers on a service-area basis (rather than a company-wide basis). As stated to the Department in relation to last year's filing, Boston Edison does not have data available on the events that were excluded prior to 2000 under the old definition. Therefore, the

Company's historical data cannot be recalculated consistent with the Department's new terminology for the purpose of establishing a performance benchmark at this point in time.

Schedule 1 shows the SAIDI/SAIFI performance benchmarks that were fixed for the duration of the SQ Plan based on the most recent five-years of historical data (1997-2001), excluding major events as defined on the historical "service-area" basis. The Company is also tracking SAIDI/SAIFI performance to be consistent with the Department's new definition until the commencement of a new SQ Plan. <sup>1</sup>

As shown in Schedule 1, the SAIDI benchmark is 107.00 and the SAIFI benchmark is 1.105. In 2002, the Company performance statistics were 83.38 for SAIDI and 1.117 for SAIFI, generating an offset for SAIDI and performance within one standard deviation of the benchmark for SAIFI.

#### 2. Lost-Work Time Accident Rate

The SQ Plan requires the Company to report on the Incidence Rate of Lost Work Time Injuries and Illness per 200,000 Employee Hours, as defined by the U.S. Department of Labor Bureau of Labor Statistics. This data is compiled and reported annually to the U.S. Department of Labor Bureau of Labor Statistics and the Company has 10 years of available data for this measure. Based on that data, the performance benchmark for this measure is 0.92. In 2002, the number of Lost Work Time Accidents was 0.94, which is within one standard deviation of the benchmark.<sup>2</sup>

For informational purposes, the Company has calculated the SAIDI/SAIFI performance statistics for 2000 through 2002 using the definition of "operating area," which includes the major events that are excluded from the SAIDI/SAIFI historical statistics set forth in Schedule 1. This recalculation is as follows:

 Performance Measure
 2000
 2001
 2002

 SAIDI
 106.97
 163.89
 86.87

 SAIFI
 1.221
 1.560
 1.157

On January 1, 2002, the U.S. Department of Labor, Occupational Safety and Health Administration, revised the regulations concerning the recording and reporting requirements for occupational injuries and illnesses. See 29 CFR § 1904.7. Specifically, the revised regulations require the Company to include the number of calendar days that an employee was unable to work as a result of injury, regardless of whether or not the employee was scheduled to work on those days (29 CFR § 1904.7(iv)). The Company's performance benchmark for Lost-Work Time Accident Rate, which is based on ten years of historical information, excludes weekends, holidays or other days that an employee would not normally have reported to work. For OSHA reporting purposes, the Company will maintain a log of occupational injuries or illnesses consistent with the new regulation going forward. However, for purposes of the annual service-quality report, the Company will track and report its performance consistent with the prior version of the regulation so that the performance data will match the historical data composing the performance benchmark.

#### **BOSTON EDISON COMPANY** SERVICE QUALITY STANDARDS

	Required	No. of			Penalty /			Resu	ılts - 2002	
Measures	Years <u>History</u>	Years <u>Used</u>	Historical Average	Std Dev	Offset Weight	Max (2) <u>Amount</u>	Observ.	<u>Variance</u>	No. of Std Devs	Penalty / (Offset)
Customer Service and Billing % Calls Answered (1)	10	7	63.09%	11.48%	12.5% \$	1.524.580	76.04%	12.95%	1.1278	(484,791)
% Services Appointments Met	10	0	03.09 /0 NA	NA	12.5% \$ 12.5%	1,524,580	70.04 /0 NA	12.95 /0 NA	NA	NA
% On-Cycle Meter Reads	10	6	90.11%	4.89%	10.0%	1,219,664	92.92%	2.81%	0.5749	0
Safety and Reliability										
Lost Work Day Accidents	10	10	0.92	0.25	10.0%	1,219,664	0.94	0.02	0.0801	0
SAIDI - 5 yrs (3)	5	5	107.00	23.08	22.5%	2,744,244	83.38	-23.62	-1.0234	(718,596)
SAIFI - 5 yrs (3)	5	5	1.105	0.160	22.5%	2,744,244	1.117	0.012	0.0727	0
Consumer Division Statistics										
Consumer Division Cases	10	10	1.540	0.400	5.0%	609,832	1.786	0.246	0.6151	0
Billing Adjustments	10	10	224.29	77.49	5.0%	609,832	198.80	-25.49	-0.3289	0
Total					100.0% \$	12,196,642			\$	(1,203,387)

#### Notes

- (1) Telephone statistic based on Calls Handled within 20 Seconds; includes abandoned calls.

- (2) Max penalty is incurred at 2 sd from average
  (3) Exclusions based on events affecting 15% of service areas under historical methodology.
  (4) Two percent of total T&D revenue in 2002.
  Less: Service Guarantee Payout \$12,196,992 Maximum Penalty / (Offset) \$12,196,642

#### **BOSTON EDISON COMPANY**

			ŀ	listory (1)													
Measures	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	Sample	Average	Std Dev
Customer Service and Billing																	
% Calls Answered	57.11%	56.68%	69.20%	72.74%	79.98%	46.16%	59.78%								7	63.09%	11.48%
% Services Appointments Met															0	NA	NA
% On-Cycle Meter Reads	83.49%	94.81%	94.73%	92.46%	90.23%	84.92%									6	90.11%	4.89%
Safety and Reliability																	
Lost Work Day Accidents	0.76	0.96	0.73	0.50	0.77	0.98	1.37	1.10	0.87	1.16					10	0.920	0.250
SAIDI - 5 yrs	146.77	100.33	101.21	86.31	100.4										5	107.00	23.08
SAIFI - 5 yrs	1.330	1.171	1.060	0.896	1.070										5	1.105	0.160
Consumer Division Statistics																	
Consumer Division Cases	2.292	0.996	1.087	1.097	1.776	1.523	1.478	1.608	1.742	1.803					10	1.540	0.400
Billing Adjustments	114.75	123.80	206.88	266.33	255.71	169.44	342.21	304.48	282.04	177.26					10	224.29	77.49

#### Notes

(1) 12 Month period January to December.

## **DTE 03-13**

## **Boston Edison Company**

## Annual Service Quality Report SECTION THREE

Year Ending December 31, 2002

Back-up Data and Supporting Schedules



#### **SECTION 3**

#### I. Non-Penalty Related Service Quality Information

Section VIII of the SQ Plan sets forth a number of non-penalty related reporting requirements for the Company's annual service-quality filings. These reports are as follows:

#### **Appendix 1:** Customer Surveys

Pursuant to section III.C of the SQ Plan, Boston Edison conducted an annual survey of (1) overall customer satisfaction as indicated by a statistically representative sample of residential customers, and (2) post-transaction customer satisfaction as indicated by a sample of randomly selected customers who have contacted the Company's customer-service department during the year. The surveys were conducted by Research International, which is an independent research firm with significant experience in conducting customer satisfaction surveys. The results of these surveys are presented in Appendix 1.

#### **Appendix 2**: Customer Average Interruption Duration Index ("CAIDI")

The CAIDI performance statistics for the ten most recent years ending December 31, 2002 are provided in Appendix 2. Historically, the Company's CAIDI performance statistics have been calculated on the same basis as SAIDI and SAIFI. As a result, the CAIDI performance statistics for Boston Edison are based on a calculation that excludes major events that occur on a service-area basis (rather than a company-wide basis), as discussed above in relation to the SAIDI/SAIFI benchmarks.<sup>1</sup>

In addition, it should be noted that, under the provisions of the SQ Plan, when customers lose power as a result of the process of restoring, the duration of these additional outages is included in SAIDI, but the additional number of interruptions is excluded from the calculation of SAIFI. See, Section V(I). Further, under Section I(B), CAIDI is calculated as SAIDI divided by SAIFI. A consequence of this construction is that, in calculating CAIDI, the numerator and the denominator are not representing the same outages, i.e., there are outages that are included in the numerator, but not in the denominator. To be consistent with industry practice, the numerator and the denominator of the CAIDI calculation should represent the same outages.<sup>2</sup>

#### **Appendix 3:** Restricted Work Day Rate

For informational purposes, the Company has recalculated the CAIDI performance statistics since 2000 using the new definition of "operating area," which includes the major events that are excluded from the SAIDI/SAIFI historical statistics set forth in Schedule 1. This calculation is as follows:

Performance Measure	2000	2001	2002
CAIDI	87.60	105.10	75.10

The Company's CAIDI statistic for 2002 would be 62.01 with the outages associated with power restoration excluded from SAIDI.

The Restricted Work Day Rate is the Incidence Rate of Restricted Work Cases Per 200,000 Employee Hours, as defined by the U.S. Department of Labor, Bureau of Labor Statistics. This information is provided for the most recent ten years in Appendix 3.

#### **Appendix 4:** Electric Distribution Line Loss

Pursuant to section VIII.A of the SQ Plan, the Company is required to report electric distribution line loss on an annual basis. For 2002, this information is provided in Appendix 4. The annual line loss value for electric companies is the net result of reconciling the total sources of power to the amount of electricity supplied to customers, plus company use. The derivation of the calculation is set forth on page 401a of the Company's annual FERC Form 1.

#### **Appendix 5:** Damage to Company Property In Excess of \$50,000

Pursuant to section VIII.A of the SQ Plan, the Company is required to provide an annual report of property-damage incidents involving property damage to Companyowned facilities exceeding \$50,000 per incident. For 2002, there were no such incidents.

#### **Appendix 6:** Excludable Major Events

Pursuant to section VIII.D of the SQ Plan, Boston Edison is required to identify and report on an annual basis the outages that are considered Excludable Major Events in the calculation of SAIDI/SAIFI statistics. For 2002, this information is provided for Boston Edison in Appendix 6.

#### **Appendix 7:** Tree Trimming Policy

The Company's Tree-Trimming Policy is provided as Appendix 7.

#### **Appendix 8:** Capital Expenditures

The Company's data on capital expenditures for the ten most recent years (1993 through 2002) is provided in Appendix 8.

#### **Appendix 9:** Spare Component and Acquisition Inventory Policy

Pursuant to section VIII.F of the SQ Plan, Boston Edison is required to report on an annual basis its policy for identifying, acquiring, and stocking critical spare components for its distribution and transmission system. The Spare Component and Acquisition Inventory Policy is provided as Appendix 9.

#### **Appendix 10:** Poor Performing Circuits

Pursuant to section VIII.G of the SQ Plan, Boston Edison is required to identify and report on an annual basis its poor performing circuits. For 2002, the Company's

information is provided as Appendix 10. Poor performing circuits are any distribution feeder that:

- (a) has sustained a circuit SAIDI or SAIFI value for a reporting year that is among the highest (worst) ten percent of that utility's feeders for any two consecutive reporting years; or
- (b) has sustained a circuit SAIDI or SAIFI value for a reporting year that is more than 300 percent greater than the system average of all feeders in any two consecutive reporting years.

#### **Appendix 11:** Staffing Levels

Staffing level information for the Company is provided in Appendix 11.

#### **Appendix 12:** Performance Benchmarks for 2003

In Appendix 12, the Company has updated historical data to include 2002 performance data in the calculation of benchmarks for the 2003 reporting period, where the benchmarks were not fixed for the duration of the SQ Plan.

#### II. Customer Service Guarantees

Pursuant to section XI of the SQ Plan, Boston Edison is required to provide information as to the customer payments credited as a result of the customer-service guarantee program during the service-measurement period. As indicated in the SQ Plan, Boston Edison credits the customer's account by \$25.00 if a meter reading is inaccurate, if the Company knowingly fails to inform a customer that it will be more than 30 minutes late for a service appointment, if there is an error in the direct payment or pay-by-phone billing systems, if the Company fails to inform a customer of a scheduled service interruption, or if the Company does not respond to a billing question by the next business day. In addition, if a new residential service line is not connected by the agreed date (after all permits are received), the first month's bill is free (minimum \$25, maximum \$100). In 2002, Boston Edison remitted to customers a total of \$350.00 under its Customer-Service Guarantee program.

#### III. Conclusion

As set forth above, this filing establishes the performance benchmarks for service-quality measures subject to the penalty mechanism based on historical data available through December 31, 2002. On March 1, 2004, Boston Edison will make its annual filing, which will compare the Company's performance in 2003 to the benchmarks established in this filing. The Company's March 2004 filing will also include documentation to satisfy all other reporting requirements set forth in the approved SQ Plan.

## **Customer Surveys**

Year Ending December 31, 2002



#### RESEARCH INTERNATIONAL



#### **MEMO**

TO NSTAR

FROM Research International

DATE February 19, 2003

RE: Residential customer satisfaction metrics (former BECO service area)

The following results are from a representative sample of 700 NSTAR residential customers. Of the 700 surveys, 550 were with NSTAR Electric residential customers (300 in the former Boston Edison service area, and 250 in the former COM/Electric service area) and 150 with NSTAR Gas residential customers. Respondents were asked to evaluate their overall satisfaction with NSTAR using a 7-point scale, where a rating of "7" means "very satisfied." The data from NSTAR Electric customers are weighted to reflect the true proportion of former Boston Edison customers to former COM/Electric customers. "Don't know" responses are excluded from the analysis.

• Eight in ten (80.2%) NSTAR Electric customers living in the former Boston Edison service area rate positively their overall satisfaction with NSTAR (5 or higher on 7-point scale).

The associated margin of error for the sample of 300 surveys is +/-5.7 percentage points at the midpoint of the 95% confidence level

Jeff Banks Senior Vice President Research International/Cambridge 617.661.0110 955 Massachusetts Avenue Cambridge, MA 02139

#### RESEARCH INTERNATIONAL



#### **MEMO**

TO NSTAR

FROM Research International

DATE February 19, 2003

RE: Post-transaction residential customer satisfaction metrics (former BECO service area)

The following results are from a representative sample of 900 NSTAR residential customers who recently contacted NSTAR for service. Of the 900 surveys, 724 were with NSTAR Electric residential customers (458 in the former Boston Edison service area, and 266 in the former COM/Electric service area) and 176 with NSTAR Gas residential customers. Respondents were asked to think about the most recent time they called NSTAR and to evaluate their *overall satisfaction with the service they received from the customer service department of NSTAR* using a 7-point scale, where a rating of "7" means "very satisfied." "Don't know" responses are excluded from the analysis.

 Eight in ten (81.6%) NSTAR Electric customers living in the former Boston Edison service area rate positively their overall satisfaction with NSTAR's customer service (5 or higher on 7-point scale).

The associated margin of error for the overall sample of 458 surveys is +/-4.6 percentage points at the midpoint of the 95% confidence level

Jeff Banks Senior Vice President Research International/Cambridge 617.661.0110 955 Massachusetts Avenue Cambridge, MA 02139

## **Customer Average Interruption Duration Index**

### **CAIDI**

Year Ending December 31, 2002



#### Boston Edison Company SQ Plan Historical Data

<u>Year</u>	<u>SAIFI</u>	<u>CAIDI</u>	<u>SAIDI</u>
1993	1.062	114.75	121.84
1994	1.250	113.21	141.50
1995	1.090	107.90	117.60
1996	1.070	111.58	119.40
1997	1.070	93.80	100.40
1998	0.896	96.38	86.31
1999	1.060	95.50	101.21
2000	1.171	85.66	100.33
2001	1.330	110.39	146.77
2002	1.117	74.66	83.38

Excludes outages affecting greater than 15% of service area.

## **Restricted Work Day Data**

Year Ending December 31, 2002



## Injury Statistics Restricted Duty Cases

Boston Edison Company

	Hrs. Wkd.	# of Cases	Rate
1993	7,326,624	n/a	n/a
1994	6,698,998	147	4.39
1995	6,153,188	154	5.01
1996	5,490,958	131	4.77
1997	5,212,802	107	4.11
1998	4,825,143	85	3.52
1999	4,902,764	91	3.71
2000	3,947,311	65	3.29
2001	4,224,811	84	3.98
2002	4,849,182	69	2.83
		Mean	3.96

Incident Rate = Number of Cases x 200,000/Hours Worked

### **Annual Line Loss Data**

Year Ending December 31, 2002



Annual Line Loss Data Boston Edison Company					
1993	5.5%				
1994	6.0%				
1995	5.8%				
1996	5.7%				
1997	5.7%				
1998	5.7%				
1999	6.6%				
2000	6.3%				
2001	7.0%				
2002**	7.0%				

<sup>\*\*</sup> Subject to finalization of FERC FORM1 1 and DTE Annual Report for year-end 2002.

## **Damage to Company Property**

Year Ending December 31, 2002



Damage to Company Property in Excess of \$50,000

• None

**Excludable Major Events** 

Year Ending December 31, 2002



## 2002 Major Outage Events

<b>Boston Ediso</b>	Boston Edison Company										
Service Area	Event / Date	Customers Affected	Customers without service at periodic intervals	Longest Customer Interruption	Crews used to restore service						
Walpole	Snowstorm December 25-26	10,957	<=30 minutes – 4,054 <=60 minutes – 3,254 <=90 minutes – 857 <=120 minutes – 448 <=240 minutes – 1,817 <=300 minutes – 231 359 minutes – 296	359 minutes	16 crews (12/25) 19 crews (12/26) 15 crews (12/27)						
Framingham	Snowstorm December 25-26	16,327	<=30 minutes – 2,403 <=60 minutes – 6,306 <=90 minutes – 1,418 <=120 minutes – 1,690 <=240 minutes – 3,433 <=300 minutes – 980 330 minutes – 97	330 minutes	11 crews (12/25) 27 crews (12/26) 6 crews (12/27)						

**Tree Trimming Policy** 

Year Ending December 31, 2002



#### **NSTAR DISTRIBUTION TREE PRUNING POLICY**

#### **General**

The Distribution Pruning Policy is intended to provide pruning contractors with guidelines for performing work acceptable to the NSTAR Company, including proper pruning techniques, work progress reporting and time reporting.

The Policy also documents general management procedures for dealing with the various aspects of Pruning Program Control.

The Policy pertains to both maintenance pruning, which is done on an ongoing cyclic basis of approximately three to six years and to "new work" pruning.

Note: Company representative or delegate as referred to in this policy shall be understood to mean those individuals normally assigned to monitor tree crew activities in a given district or area within a district.

#### **Guidelines For Tree Pruning And Removal**

- 1) Provisions of the latest revisions to ANSI A-300 American National Standard for Tree Care Operations Tree Shrub and Other Woody Plant Maintenance Standard Practices shall be followed.
- 2) The desired amount of clearance necessary for conductors and electrical equipment should be such that high winds, rain, heavy snow, ice or a combination of any of them will not cause limbs or trees to come in contact with wires or other equipment. Effort should be made to remove any dead trees or limbs that in the event of their falling could contact conductors.
  - a) Clearance Guidelines Refer to Exhibit 1.
  - b) Road Screens Where existing, shall be topped depending on the ground clearance of the conductors above, using the drop crotch or "Natural Pruning" technique as shown in Exhibit 1.
- 3) Generally Accepted Scientific Arboricultural Principles as Applied to line Clearance Work For safe and healthy trees, the following recommendations are suggested:
  - a) Branches growing into a conductor should be removed by cutting back at a lateral or main side branch, rather than stub cutting. ("Natural Pruning")
  - b) All cuts shall be properly made, using undercutting to avoid damage by loosening or stripping of bark; the so-called "Branch Bark Collar" shall be left intact but no stubs shall remain. Cuts shall be smooth to allow for callus tissue to form and to retard decay. Properly made saw cuts at the laterals, where the lateral is at least one third (1/3) the size of the branch or leader removed, reduce the number and vigor of re-growth sprouts through the trees natural growth mechanisms. ("Natural Pruning").

- c) In general, tree paint is not required. In specific instances state or municipal authorities may require tree paint. In such instances growth retardant paint should be used. Asphalt based tree paints shall not be used as they promote growth of certain rot fungi.
- d) Remove raised sucker clusters at parent limb and remove undesirable limbs that have been stubbed off and have formed accumulated sucker clusters.
- e) Directional prune so that growth will be away from wires.
- f) Lighten overhanging (within 10' of trimmed zone) or adjacent leaders and branches and shorten evergreens overhanging conductors to prevent limbs touching or breaking off and falling on lines in severe storms.
- g) Remove leaders and limbs that are a hazard to lines due to death, decay, weak configuration and split or weak crotches.
- h) Only appropriate tree tools in good working condition shall be used.
- i) Climbing irons shall not be used in any tree unless the tree is to be removed.
- j) All severed limbs and branches (hangers) shall be removed from trees after pruning.
- k) Guidelines for tree removal.
  - i) Unless previous arrangement has been made with the Company Representative, trees that are a hazard to the lines shall be removed; i.e. any tree which by the nature of it's health, size or condition endangers the line.
  - ii) Defective or diseased trees shall be removed whenever possible.
  - iii) Fast growing and weed trees shall be removed as undesirable species, whenever possible.
  - iv) Trees shall be felled away from conductors.
  - v) In areas where damage might be caused to conductors or property, trees shall be stripped of all limbs with the trunk removed in sections, as necessary.
  - vi) All brush shall be removed daily from public thoroughfares and other improved places unless otherwise arranged with the Company Representative.
  - vii) All stumps shall be cut flush and parallel to the ground. Tree stumps shall not exceed a maximum height of three (3) inches. All brush shall be cut flush and parallel to the ground.
  - viii) Wood and brush (cribbing) shall be used as a cushion to protect from potential damage due to felling trees or heavy limb sections. The probability of a bouncing effect is normally increased when using cribbing and should be allowed for.
- 4) Prioritization of Pruning Distribution pruning should be performed on a circuit basis whenever possible. Always start pruning from the substation out, as this area is of greatest importance due to the large number of customers affected by outages caused in this area.
- 5) Three-phase lines should have greater clearance and attention than single-phase spur lines. Pruning is performed to protect the largest number of customers from an interruption. Three-phase interruptions will affect more customers.

- 6) Safety Good Relations Clean-up
  - a) The contractor will take all safety and protective precautions and with respect thereto will strictly enforce all applicable regulations of Municipal, State and Federal Laws, the various insurers and the Company. These shall include OSHA and ANSI Z133.1.
  - b) A neat appearance, pleasant approach and a clear explanation as to what you mean or want when contacting people. In any instance where there is a misunderstanding or a possible cause for trouble with a customer or municipal official, notify the Company Representative, so that proper action can be taken. When a property owner or municipal official absolutely will not allow proper pruning refer the situation to the Company Representative in writing. If pruning in a given area is under dispute move to another area.
    - i) Utility Company Relations Tree crew to contact the Company every day and report work location; details of who to report to, when and where will be specified by the local Company Representative.
    - ii) Outage Whenever there is a question of a possible accidental outage of power caused by a tree crew, the Company is to be notified immediately.
    - iii) Municipal Regulations Notify the proper municipal official (Tree Warden, etc.) as required and let them know what location you are working in. Get permission to do tree work on municipal trees from the proper authority before doing the work.
    - iv) State Regulations When doing tree work on a State Highway have a copy of the State Tree Pruning Permit with Permit Number. All tree work on State Highways must be approved and supervised by the proper State Official. State regulations on barricades and warning signs must be observed.

Dispose of all debris properly and leave the work area in a neat and clean condition. Unless otherwise specified, wood shall be left for property owner. All trucks will have leaf blowers to clear roadway areas.

#### **Contractor Responsibility**

"The relationship of the Company and the Contractor is acknowledged to be that of owner and independent contractor. The means and methods employed for performing the details of pruning shall be the responsibility of the Contractor, subject to the suggestions and approvals of the Company's designated representative."

1. Compliance with Laws and Regulations – The Contractor shall comply with all applicable laws and regulations and all work and materials are to comply in every respect with all applicable codes, laws and regulations. All necessary permits, licenses, etc., for the Work unless obtained by the Company are to be obtained and paid for by the Contractor, the Company to reimburse the Contractor for the cost thereof unless the Work is being done on a fixed fee basis.

- 2. Instructions to Contractor Pruning work includes the furnishing of all supervision, labor, equipment, tools and services necessary to trim trees in designated areas and in a manner acceptable to local or state authorities and Company Representative, per the Pruning Contract/Purchase Order. The Contractor will report daily in writing to the Company Representative any damaged Company equipment (insulators, crossarms, etc.) encountered in the course of his work.
- 3. All crews are required to attend a yearly review of NSTAR Pruning Policy at the expense of the contractor

#### **Other Related Items**

- 1. Privately Owned Facilities The Company in general will not authorize pruning of privately owned facilities.
- 2. Contractor List Owners of private electrical facilities may occasionally ask for recommendations concerning private contractors for line maintenance or pruning work. The Company position is not to make recommendation of any specific contractor for reasons of liability.
- 3. Refusal to Allow Pruning When the pruning contractor reports a refusal to allow pruning, the Company Representative shall contact the involved party in an effort to secure the proper pruning. If no agreement can be reached the refusing party shall be contacted via registered mail (Return Receipt Requested)

The letter will relate our reasons for pruning i.e. protection of our facilities, reliability of service, protection of the public (tree climbers) and serve as documentation of our attempt to secure adequate pruning. Hopefully this letter will prompt some to reconsider their refusal. If not, we will have documentation of our intent and attempt to secure adequate pruning.

4. Documentation of Tree Removal – When, due to diseased or dead state, ornamental or large shade trees are by necessity removed, documentation in the form of detailed notes and/or photographs should be kept. This documentation may be valuable in the event a customer later brings a claim against the Company for the value of a tree claiming "wrongful removal".

#### **Methods of Pruning**

There are many methods of pruning trees for line clearance, but not all methods are attractive or advantageous to the tree, nor are all methods effective for long-term line clearance. The basic pruning methods are pollarding, sharing or rounding over and natural pruning (Fig. 3).

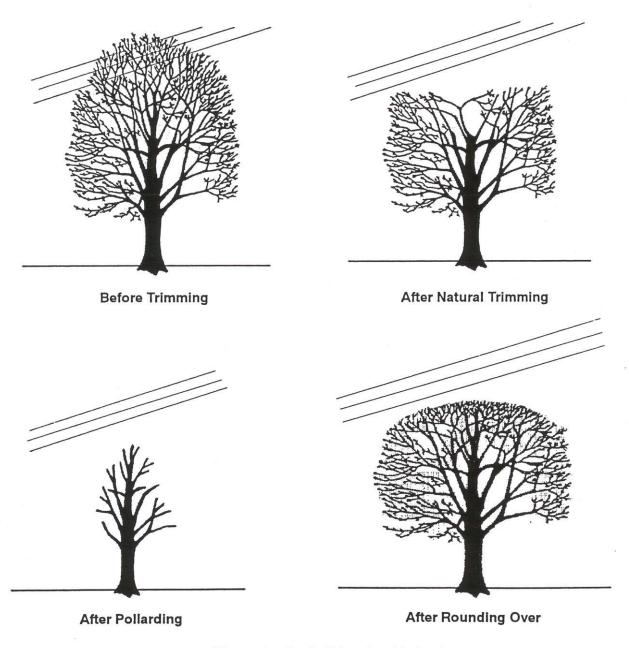


Figure 3. Basic Trimming Methods

#### Stubbing off major limbs by pollarding is not a desirable pruning practice.

The result is not only unsightly, but multitudes of fast-growing suckers sprout from the stubs and soon result in line clearance problems more serious than before. The stubs are also likely to fall victim to decay or disease. Finally, this method of pruning attracts unfavorable public attention.

**Shearing or Rounding Over** consists of making many small cuts so that the treetop is sheared in a uniform line. This results in rapid re-growth of many small sprouts, called suckers, directly toward the conductors. Because of this rapid re-growth of suckers, trees trimmed by the rounding over method need to be re-trimmed sooner than trees trimmed by the natural pruning period.

**Natural Pruning** is the method recommended by most professionals. Natural pruning is cutting branches flush at a suitable parent limb, back toward the center of the tree. This method of pruning is sometimes called "drop crutching" or "lateral pruning". An attempt is made to remove large branches to laterals at least one-third the diameter of the branch being removed. All cuts should be flush to avoid leaving stubs. Natural pruning is especially adapted to the topping of large trees where a great deal of wood must be removed. In natural pruning, most cuts are made on larger limbs with a saw, and little pole prune work is required. The results are natural-looking trees, even if large amounts of wood have been removed. Natural pruning is also directional pruning, since it tends to guide the growth of the tree away from the wires (Figure 4). Stubbing, on the other hand, tends to promote rapid sucker growth right back into the conductors.

It should be emphasized that natural clearance is highly effective in reducing future costs, and that two or three natural pruning cycles will produce an ideal situation for both the utility and the tree owner. Most shade trees lend themselves easily to this type of pruning. Elm, Norway Maple, Red Oak, Red Maple, Sugar Maple, Silver Maple and European Linden, the most common street trees, react especially well to natural pruning methods.

**Crown Reduction** is cutting back portions of the upper crown of a tree. Reducing is indicated when a tree is located directly beneath a line. The main leader of leaders are cut back to a lateral, which should be at least one-third the diameter of the limb being removed. Most cuts should be made with a saw. A pole pruner is used only to cut lateral branches. To minimize regrowth, no more than one-fourth of the crown should be removed when topping (Figure 5).

**Side Pruning** is cutting back or removing side branches that threaten the conductors. Side pruning is required where trees are growing adjacent to utility lines. Limbs should be removed at a lateral branch. Notches in tree crowns should be avoided, if possible. Shortening branches above and below the indented area, or balancing the opposite side if the crown, will usually improve the appearance of the tree. When pruning, all dead branches over the wires must be removed, since this dead wood could easily break off and cause an interruption in service. (Figure 5)

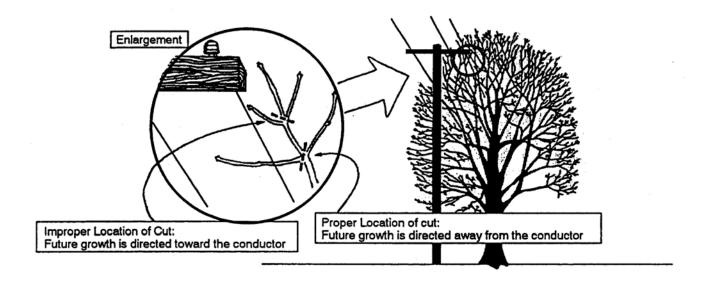


Figure 4. Natural Trimming (to direct growth away from wires)

Side Trimming is cutting back or removing side branches that threaten the conductors. Side trimming is required where trees are growing adjacent to utility lines. Limbs should be removed at a lateral branch. Notches in tree crowns should be avoided, if possible. Shortening branches above and below the indented area, or balancing the opposite side of the crown, will usually improve the appearance of the tree. When trimming, all dead branches over the wires must be removed, since this dead wood could easily break off and cause an interruption in service (Figure 5).

**Overhang Or Under Pruning** consists of removing limbs beneath the tree crown to allow wires to pass below the tree crown. This type of pruning will allow the tree to retain its natural shape and continue its normal growth. Overhangs are hazards when lines pass beneath a tree and should be removed according to the species of the tree, location and the general policy of the utility. When pruning, all dead branches above the wires are removed, since this dead wood could easily break off and cause an interruption. Many utilities have a set removal program for trees that overhang important lines (Figure 5).

**Through Pruning** is the removal of branches within the crown to allow lines to pass through the tree. It is best suited for secondaries, streetlight circuits, and cables, although it is often used on primary circuits where there is no other way of pruning the tree. Cuts should be made at crotches to encourage growth away from the lines (Figure 5).

**Combinations** - It is often necessary to combine several types of pruning in order to maintain acceptable tree appearance and provide adequate clearances.

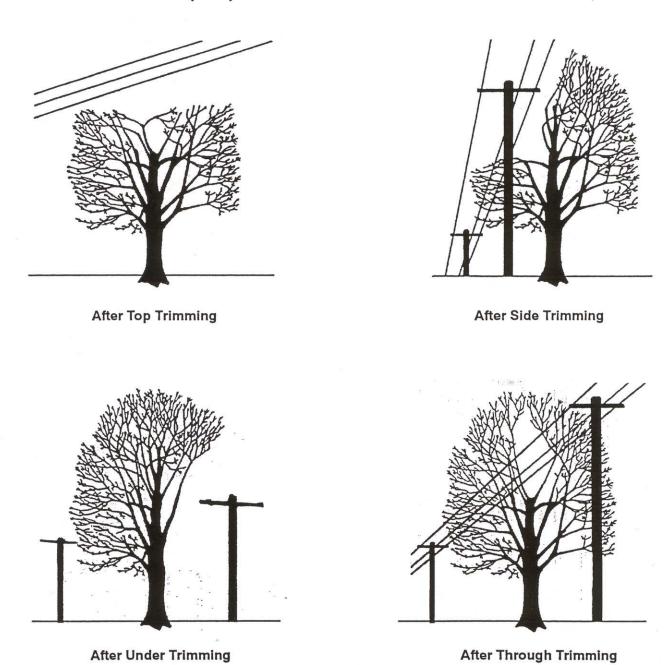


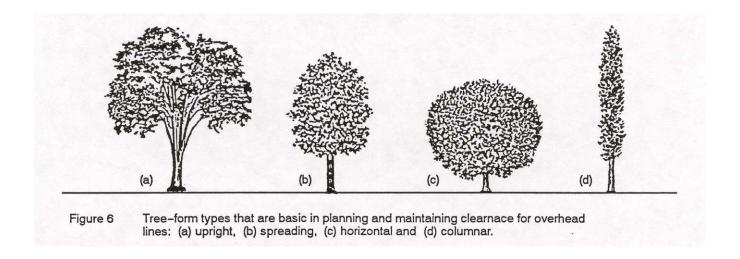
Figure 5. Four types of natural trimming.

ANSI A300 " <u>American Standard for Tree Care Operations – Tree, Shrub and Other Woody Plant Maintenance – Standard Practices"</u>, presents performance standards for the care and maintenance of trees and should be considered a part of this appendix and adhered to in tree operations under this policy.

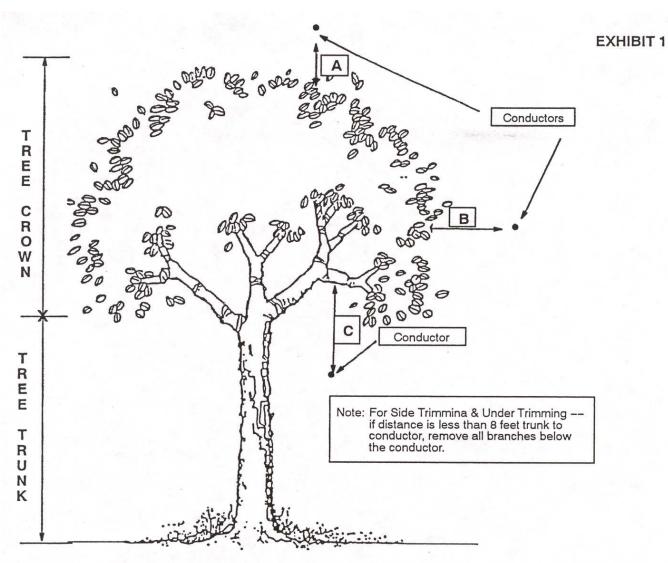
#### **Techniques**

Proper clearance for any type of overhead line is measured not only in feet of clearance but in effectiveness. Both tree and overhead line characteristics must be known to get the maximum effective clearance for each tree. Clearance not only must be adequate when the tree is trimmed but must last. Therefore, each tree should be trimmed so it will need less work at the next trim cycle.

Before tree trimmers begin work, they plan how they are going to trim each tree. Consideration is given to how and when a tree is going to re-grow after it is trimmed. Trees can usually be placed into one of four tree-form types: upright, spreading, horizontal or columnar (Figure 6). If possible, the natural form of the tree should be maintained so that it does not look heavily trimmed.



All line clearance tree pruning should be done in accordance with the American National Standard Safety Requirements for Pruning, Repairing, Maintaining and Removing Trees, and for Cutting Brush" (ANSI Z133.1). The ANSI Z133 standard provides safety criteria for line clearance tree trimmers and the public. Minimum working distances from energized conductors are listed and must always be observed.



Note: Our objective is to obtain trim clearances as indicated. However, extenuating circumstances may dictate that lesser clearnaces be accepted.

CLEARANCE	TYPE OF TRIMMING	MINIMUM CLEARANCE FOR 25 kV OR BELOW *
"A"	Topping	8 Feet
*B*	Side Trimming	8 Feet
"C"	Under Trimming (Remove overhang situations where possible)	12 Feet **

- \* Services should be trimmed only to avoid contact.
- \*\* Thin, lighten, or shorten limbs above this point on pines to prevent snow loading.

Secondary electric lines shall be cleared for a minimum clearance of three feet.

# **Boston Edison Company**

## **Capital Expenditures**

Year Ending December 31, 2002



Appendix 8

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Natulbudian.												
istribution:	0 11	D. F Ota F 000									5.4	457
Framingham	Sudbury	Retire Station 360	-	-	-	-	-	-	-	-	54	457
Mass Ave		Retire Primary Network Unit 9 Roxbury	-	-	-	-	-	-	-	-	747	277
Mass Ave	Newton	Relieve the Newton line	-	-	-	-	-	-	-	-	293	197
Various		Field Support - External Activities	-	-	-	-	-	-	-	1	-	
Various		Substation Data Collection System	-	-	-	-	-	-	-	91		
Mass Ave	Boston	Bovis Construction Avery/Wash St, Boston	-	-	-	-	-	-	-	252	175	9
Waltham		Panametric Tech Kendrick St Needham	-	-	-	-	-	-	-	108	106	1
Mass Ave		Northeastern Univ, Davenport St Commons	-	-	-	-	-	-	-	195	18	-
Waltham	Woburn	GTE - 100 Metro North, Woburn	-	-	-	-	-	-	-	-	304	16
Framingham	Natick	Tech Commons - Speen St, Natick	-	-	-	-	-	-	-	(25)	5	59
Walpole	Westwood	The Summit Rosemont Rd Westwood	-	-	-	-	-	-	-	304	81	3
Mass Ave	Boston	Scheppens Eye Res., 20 Staniford St - Boston	-	-	-	-	-	-	-	149	65	-
Mass Ave	Boston	Modern Continental Construction - 470 Atlantic Ave., Boston	-	-	-	-	-	-	-	-	615	-
Mass Ave	Boston	Boston Athenaeum - 10 1/2 Beacon St	-	-	-	-	-	-	-	(104)	477	31
Framingham	Hopkinton	EMC Research & Development Building	-	-	-	-	-	-	-	- 1	2	60
Mass Ave	Allston	Genzyme - Install New Supply Station - Allston	-	-	-	-	-	-	-	-	37	_
Mass Ave	Brighton	Globix Internet 2 Line Customer Substations	-	-	-	_	-	-	_	-	16	447
Mass Ave	Boston	Broad &Wendell - 109 Broad Street, Secondary Network Vault 244	_	-	_	_	-	_	_	-	196	33
Various	2000011	Engineering Special Purchase 25/4KV Mobile Substation	_				_				7	-
_	Povhus	4kv Convert Circuit 8N9, Roxbury									272	
Mass Ave			-	-	-	-	-	-	-	-		320
Mass Ave	Boston	Establish Secondary Network Vault 464 - Columbus Ave - Boston	-	-	-	-	-	-	-	-	3	120
Mass Ave	Brighton	Relieve Brighton 13.8kv Distribution	-	-	-	-	-	-	-	-	426	
Mass Ave	Brookline	New Brookline Village Supply	-	-	-	-	-	-	-	-	955	18
Mass Ave	Brookline	Relieve Coolidge Corner 506-05,07,9	-	-	-	-	-	-	-	-	247	13
Mass Ave		Increase Supply Medical / Fenway Area	-	-	-	-	-	-	-	-	1,859	1,602
Mass Ave	Walpole	Relieve Walpole Line Group	-	-	-	-	-	-	-	-	216	19
Mass Ave	Arlington	Relieve Arlington Line Group and Station #59	-	-	-	-	-	-	-	-	435	670
Mass Ave	Boston	Establish Terciary Network Vault @ 1 Lincoln St - Boston	-	-	-	-	-	-	-	-	43	466
Somerville	Somerville	Internet 200 Innerbelt	-	-	-	-	-	-	-	-	112	341
Waltham	Waltham	Replace Direct Buried Cable - Stearns Hill Rd - Waltham	-	-	-	-	-	-	-	-	4	2
Various	Chelsea	Increase Capacity at Station 488 - Chelsea	-	-	-	_	-	-	_	-	591	64
Various	0.10.000	Network Spare Transformer	_	-	_	_	_	_	_	-	335	2,613
Mass Ave	Boston	Tufts Univ.,150 Harrison Ave - Boston	-	-	-	-	-	-	-	-	137	330
Mass Ave		Markley Stearns Boston - 1 Summer St.	_	_		_	_	_	_	_	(68)	21
Walpole			-	-			-			-	442	11
<del></del>		University Ave Westwood 2%surcharge to switch from OH to Underground										
Framingham		Improve Reliability of Circuit 342-H1	-	-	-	-	-	-	-	-	2	192
Walpole	Medway	Relieve Circuit 65-H3 Stepdowns	-	-	-	-	-	-	-	-	2	97
Mass Ave	Boston	Increase Secondary Network Vault 480 - Newbury St - Boston	-	-		-	-	-	-	-	2	86
Various		Temporary Customer	-	-	8	(41)	(34)	4	-	-	-	-
Various		Distribution Capacitor	(1)	-	-	-	-	-	-	-	-	-
Various		Rebuild Hospital Area	-	-	-	5	30	10	-	-	-	-
Various		Various Stations - Replace PCB's	(13)	-	-	-	-	-	-	-	-	-
Various		Replace PCB Capacitors	-	-	(2)	2	4	-	-	-	-	-
Various		Various Station Miscellaneous Stations Additions	-	-	- ` ´	-	-	1	-	-	-	-
Somerville/Walth	Somerville	Act of Public Authority - Washington St - Somerville	8	-	-	-	-	-	-	-	-	-
Various		Station 450 Recloser Switches	-	(1)	-	-	-	-	-	-	-	-
Various		Underground and Overhead Development	-	- (.,	1	-	-	_	-	-	-	_
Various		Street - Distribution Equipment	_	-	13	_	-	_	_	-	_	-
Various	+	Street Lighting	-		4		-			-		
Various	-	Station 12 - Chatham Street	1	-	- 4	-	-	-		-	-	
				- (2)	-							
Various		New Station #12 - Street	1 (25)	(2)	-	-	-	-	-	-	-	
Various		Station 274 Expansion	(35)	-	- (0)	-	-	-	-	-	-	-
Various		Renewal to Electric System	-	-	(8)		-	-	-	-	-	
Various		Various Station Miscellaneous Stations Additions	9	-	-	-	-	-	-	-	-	-
Mass Ave		Reconductor Circuit 3623 - Brighton	4	(4)		-	-	-	-	-	-	-
Various		Back Up Battery System	-	(9)	(1)	-	-	-	-	-	-	_
Mass Ave		Disconnect Street Service	-	-	(4)	-	-	-	-	-	-	-
		Auburn St - Raytheon	-	(1)	- ` `	-	-	-	-	-	-	-
Various		Substation - Distribution	(6)		-	-	-	-	-	-	-	_
Various		Street Distribution Equipment	- (0)	-	(4)		-	-	-	-	-	_
Various		Minor Capital Additions Distribution	-	-	(1)		(2)		-	-		
		Renewal to Electric System	-	-			- (2)	-	-	-	-	
Various		Inchewal to Electric System	-	-	(2)	_		-	_	- 1	- 1	-

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		Act of Public Authority - Minor Rearrange	-	-	(1)		-	-	-	-	-	
Various		Various Station Miscellaneous Stations Additions	(1)	-	-	(4)	-	-	-	-	-	
Walpole/Framing	ı(	Extend Circuit 416-H2	(3)	-	-	-	-	-	-	-	-	
/arious		Station 509 Cambridge Lines	1	1	-	-	-	-	-	-	-	
Mass Ave		Station Vault Equipment	(1)	2	-	-	-	-	-	-	-	
Various		Street Equipment Exc Hous	- 1	-	(2)	-	-	-	-	-	-	
Various		Various Cities Minor Additions	_	_	(1)	-	-	-	_	_	_	
Various		Andrew Square Station	287	616	1,379	(1)	-	-	-		-	
Various		Andrew Square Station	8,039	8,418	2,167	25	_	_			_	
			-									_
Various		Act of Public Authority - Various Towns	- 4	-	(1)		-	-	-	-	-	
Various		Various Station Miscellaneous Stations Ad	4	-	-	1	-	-	-	-	-	
Various		Retire Primary Network Unit #1	1	-	-	-	-	-	-	-	-	
Mass Ave		Rebuild - Extend 13-0	(4)	-	(2)	2	-	-	-	-	-	
Various		Station 502 - Norfolk Station	4	104	-	19	-	-	-	-	-	
Various		Install Cable Monitoring and Rating System Various Locations	1	-	-	26	-	-	-	-	-	
Various		Act of Public Authority Cummings Hyg Wr	-	-	174	46	-	-	-	-	-	
Somerville/Walth	Waltham	Act of Public Authority - Lexington St Overhead - Waltham	-	(1)	-	-	-	-	-	-	-	
Mass Ave	Boston	Act of Public Authority - Mason St - Boston	129	21	_		_	_	_		_	
Various	Booton	Install Cable Monitoring and Rating System Street	53	35	-	-	-	-	-	_	-	
				- 35								_
Mass Ave		Substation Distribution	41		- 44	- 4	- 75	- 4	- (0)	-	-	
Various		Street Distribution Customer	-	-	11	4	75	1	(8)	-	-	
Various		Minor Capital Additions Transmission & Distribution		-	1	(5)	-	-	-	-	-	
Various		Cana Perm Rd Rel Cha	(26)	-	-	-	-	-	-	-	-	
Mass Ave	Brighton	Extend 329-H1 Brighton	-	-	(4)	-	-	-	-	-	-	
√arious		Renewal to Electric System	-	-	(6)	-	-	-	-	-	-	
Various		Act of Public Authority - Various Towns	-	-	(2)	-	-	-	-	-	-	
Various		Various Station Additions	20	(1)	- 1	1	-	_	_	_	-	
Mass Ave		Rebuild 13-01	-	2	_	- '	-	_	-		-	
Mass Ave	Dorchester	Relieve Station 67 - Dorchester	_	(1)			_				_	
	Dorchester				-	- 4		-				_
Various		Replace Oil Switches	43	1	-	4	-	-	-	-	-	
	Hopkinton	PT1 Hopkinton Growth	-	-	11	-	-	-	-	-	-	
Mass Ave		New Supply VA Hospital	-	5	-	-	-	-	-	-	-	
	Waltham	Act of Public Authority - Lexington St & Other - Waltham	-	(4)	(4)	-	-	-	-	-	-	
Various		Station 211 - Replace T110	58	(3)	32	15	-	-	-	-	-	
Various		20-H4 Replace Ambr	(4)	- '	-	-	-	-	-	-	-	
Various		Reconductor Circuit 284-01		4	_	-	_	_	_	_	_	
- u.iouo	Waltham	Waltham Street Work	_	- '	-	-	-	-	1		-	
Various	vvaitiaiii	Underground and Overhead Development	-	_			-	-	- '		_	
					(4)		-		-			_
Various		Substation Distribution	1	-	- (4.4)	- (40)	-	- (0)	-	-	-	-
Various		Street Distribution Customer	-	-	(11)	(16)	36	(3)	-	-	-	
Various		Minor Capital Additions Transmission & Distribution	-	-	(6)	(4)	-	-	-	-	-	
Various		Interconnect NEA RO	-	4	-	-	-	-	-	-	-	
		Relieve Circuit 31501	-	-	-	17	-	-	-	-	-	
Mass Ave		Replace Split Fiber Main - Various	3	(2)	-	-	-	-	-	-	-	
		Prentiss St - Circuit	20	- 1	-	-	-	-	-	-	-	
		Relieve 433-H4	2	-	-	-	-	-	-	_	-	
		Nagog Woods Action		_	-	_	21	_	-		_	
/orious		Renew Electric Transmission & Distribution System	1			-						
√arious				(6)	(1)		-	-	-	-	-	_
				-	22	-	-	-	-	-	-	
Various		Renew Electric Transmission & Distribution System						_	_		_	
Various Various		Indirect Labor Supr 1989	9	8	9		-	-		-	-	
Various Various Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs		8 -	-	1	-	-	-	-	-	
/arious /arious /arious		Indirect Labor Supr 1989	9									
Various Various Various Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs	9	-	-	1 (2)		-	-	-	-	
Various Various Various Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work	9 - - 18	-	- (1)	1 (2)	-	-	-	-	-	
Various Various Various Various Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient	9 - - 18 (3)	- - 2 -	- (1) (5)	1 (2) -	- - 9	- - -	- - -	- - -	- - -	
Various Various Various Various Various Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls	9 - - 18 (3) 1,525	- 2 - 7,172	- (1) (5) - 3,167	1 (2) - - 605	- - 9 - 185	- - - (1,073)	- - - -	- - - -	- - - -	
Various Various Various Various Various Various Various Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors	9 - - 18 (3) 1,525	- 2 - 7,172	- (1) (5) - 3,167	1 (2) - - 605	- - 9 - 185	- - - (1,073)	- - - - -	- - - - -	- - - -	
Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors Station 470 Switchgear	9 - - 18 (3) 1,525 - 8	- 2 - 7,172 -	- (1) (5) - 3,167 -	1 (2) - - 605 -	- 9 - 185 -	- - - (1,073) (6)	- - - - -	- - - - -	- - - - -	
Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors Station 470 Switchgear Expand Radio - Sectional	9	- 2 - 7,172 - - 11	- (1) (5) - 3,167 - -	1 (2) - - 605	- - 9 - 185	- - - (1,073)	- - - - -	- - - - -	- - - -	
Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors Station 470 Switchgear Expand Radio - Sectional N. Wash St - Duct Bank	9 - - 18 (3) 1,525 - 8	- 2 - 7,172 - - 11	- (1) (5) - 3,167 -	1 (2) - - 605 -	- 9 - 185 -	- - - (1,073) (6)	- - - - -	- - - - -	- - - - -	
Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors Station 470 Switchgear Expand Radio - Sectional	9	- 2 - 7,172 - - 11	- (1) (5) - 3,167 - -	1 (2) - - 605 - -	- 9 - 185 - -	- - - - (1,073) (6)	- - - - - -	- - - - -	- - - - - -	
Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors Station 470 Switchgear Expand Radio - Sectional N. Wash St - Duct Bank Retirement of Primary Network Unit 4	9 18 (3) 1,525 8 (4) 31 1	- 2 - 7,172 - - - 11 -	- (1) (5) - 3,167 - - -	1 (2) - - 605 - - -	- 9 - 185 - - -	- - - (1,073) (6) - -	- - - - - - -	- - - - - -	- - - - - - -	
Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors Station 470 Switchgear Expand Radio - Sectional N. Wash St - Duct Bank Retirement of Primary Network Unit 4 New Distribution Circuit Hyde Park/Dedham	9	- 2 - 7,172 - - 11 - 1 (2)	- (1) (5) - 3,167 - - - - -	1 (2) 	- 9 - 185 - - - - -	- - - (1,073) (6) - - -	- - - - - - - -	- - - - - - - - -	-	
Various		Indirect Labor Supr 1989 Various Stations - Minor Repairs Act of Public Authority - Street Work Minor Substation Work Install Dig Transient Bos Ed Energy Controls Station 320 Reactors Station 470 Switchgear Expand Radio - Sectional N. Wash St - Duct Bank Retirement of Primary Network Unit 4	9 18 (3) 1,525 8 (4) 31 1	- 2 - 7,172 - - - 11 -	- (1) (5) - 3,167 - - - -	1 (2) - - 605 - - - -	- - 9 - 185 - - - - - - - - 7	- - (1,073) (6) - - - - -			-	

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000		2002
Various		Outdoor Municipal Light	-	-	22	1	-	2	-	-	-	
Various		Expand Remote Monitoring System Part 2	553	23	17	-	-	-	-	-	-	
Mass Ave		Fenway Distribution Conversion	11	(1)	-	-	-	-	-	-	-	
Various		Establish Multiple Customer C11 Smith St	19	1	-	-	-	-	-	-	-	
	Somerville	Phase 1 Conversion - Somerville	51	-	-	-	-	-	-	-	-	
Mass Ave	Boston	East Boston Conversion	245	2	-	-	-	-	-	-	-	
Various	Bedford	Fiber - Optic - Bedford	139	-	-	-	-	-	-	-	-	
Various		MWRA Power Supply	- 1	-	-	(220)	2	- 1	(114)	-	-	
		Reconductor Circuit	(1)	-	-	- 1	-	- 1	-	-	-	
	Medford	Medford Center Backup	11	-	-	-	-	-	-	-	-	
		Circuit 146-H9 RT 1A	-	(6)	-	-	-	-	-	-	-	
		Rebuild Overhead	13	-	(27)	-	-	-	_	_	-	
Waltham		Speen Street Circuit 433-H1	7	-	-	_	-	-	_	_	_	_
	Ashland	Relieve Circuit 274-H1 - Ashland	18	2		-	-	-	_	-		
	7 tornaria	Indirect Engineering EESO 1990	12	(6)	2	_	_	_		_		_
Various		Transmission & Distribution Renewals Metro	(2)	(46)	(16)		-	-		-		
Various		Metro Transmission & Distribution Paving	(2)	(40)	3	-	-	-	<u>-</u>			-
Various		Substation Transmission & Distribution Renovations	-	-	(1)		-	-	-			-
Various	-	Metro Transmission & Distribution Paving	3	2	- (4)	-	-	-	-	-		-
Various		Act of Public Authority - Various Towns		-	(1)		-	-	-	-	-	-
Various		Miscellaneous Station Additions	57	42	(6)	5	-	-	-	-	-	
Various		Transformer Performance Analysis	-	-	3	-	-	-	-	-	-	
		Retrofit Sprinkler	111	8	(22)	(117)	-	-	-	-	-	
/arious		Improve Reliability	58	-	-	-	-	-	-	-	-	
		Overhead Reconductor Line 419-9	-	1	-	-	-	-	-	-	-	
		Extend Line 13-109 Street Work	38	-	-	(1)	-	- 1	-	-	-	
		Street Work Station 496	12	-	-	- 1	-	- 1	_	-		
		West Medway 2nd Parcel	3	-	-	-	-	-	-	-		
		Station 292 Auto Bus Restoral Scheme	27	-	87	_	-	-	_	_	_	
Mass Ave		Install Micro For Pru	313	1		-	-	-	_	-	_	
110007110		Substation Alarm	1	- '		_	-	-		_		<b>—</b>
Mass Ave		Replace Split Fiber Main	66			-	-	-				
viass Ave		Reconductor Circuit 52-0	86	71	53	- 8	-	-	<u>-</u>			-
		Establish TOE To CI	32	5	-	-	-	-	-	-		-
		Establish New Secondary Network Vault 89 Street Work	2	2	-	-	-	-	-	-		
		Establish Secondary Network Vault 89 Street Work	1	-	-	-	-	-	-	-		-
		Establish Secondary Network Vault 587 North	2	-	-	-	-	-	-	-		
		Establish Secondary Network Vault 587 North	-	1	-	-	-	-	-	-	-	
Various		Underground and Overhead Development	-	-	8	-	-	-	-	-	-	
Various		Substation - Customer	175	9	-	- 1	(39)	48	-	-	-	
Various		Street Customer	-	-	20	17	1	-	-	-	-	
/arious		Various Transmission & Distribution Minor Capital Additions	-	-	(56)	(4)	1	-	_	-	_	
/arious		Various Outdoor Street Lighting	-	-	(15)	16		-	5	_	_	
Various		Establish New Multi Customer-14 BHA	91	6	3	6	-	-		-		-
various		SCADA AUndergroundmentation	218	9		-	_	-	2			
												-
	D. II	Upgrade New England Ex Pk	5	-		-	-	-				-
	Dedham	New Dedham Circuit	60	-	-	-	-	-	-	-		-
, .	Acton	Relieve Acton Circuit	38	-	-	-	-	-	-	-		
/arious	Hyde Park	Act of Public Authority - Hyde Park ave - Hyde Park	1	-	-	-	-	-	-	-		
Various		EE & SO Indirect Engineering	2	-	-	-	-	-	-	-	-	
/arious		Transmission & Distribution Renewals - Metro	2	1	(1)	-	-	-	-	-	-	
/arious		Substation Transmission & Distribution System Renovations	-	-	(137)	-	(1)	-	-	-	-	
/arious		Metro Transmission & Distribution Asbestos Removal	1	(2)	-	-	-	-	-	-	_	
/arious		Metro Transmission & Distribution Indirect Labor	(3)	- 1	-	- 1	-	- 1	-	-	-	
/arious		Various Projects	1	-	(1)	(16)	-	-	-	-	-	
		Purchase and Sale	-	-	- (1)	688	-	-	-	-	-	
/arious		Act of Public Authority	-	-	(4)		-	-	_	-		
various Various	+	Miscellaneous Station Additions	99	149	(1)		-	-		-		-
v ai iUU3	-	Radio Control Sectional		149								-
			299		-	-	-	-	-			-
	-	Establish New Chestnut Hill Supply	94	-	- (0)	-	-	-	-	-		-
		Establish Circuit 277-1367H1S	8	-	(3)		-	-	-	-		
							(4.5)			(4)		1
Various		Replace Transformer Station 65	31	1,382	1,061	139	(15)	-	-	(1)	-	
Various		Replace Transformer Station 65 DD Report Transition	31 4 27	1,382	1,061	- 139	(15)	-	-	- (1)	-	

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		Rebuild Circuit 211-503/	112	1	-	-	-	-	-	-	-	-
		Retire Quincy Facility	-	33	-	14	-	-	-	-	-	-
		Radio Control sectionalizing	1	1	-	-	-	-	-	-	-	
		Station 211 Autotransformer Modification	-	-	153	-	-	-	-	-	-	
		Relocate Circuit 292-03,08,H8	360	83	-	-	-	-	-	-	-	
		Increase Capacity Ashland/Hopkinton	-	-	81	54	8	-	-	-	-	
		Install Fault Indicator	1	-	1	-	-	-	-	-	-	
	Needham	Retire Station 330 Needham Station Work	151	62	40	(1)	-	-	-	-	-	
	Needham	Retire Equipment Station 330 Needham	5	12	4	- '	-	-	-	-	-	
		Telecom Upgrade	35	-		-	-	-	_	_	-	
	Hopkinton	Puchase Property - Hopkinton	17	1		-	-	-	_	_	-	
Various	Поркиноп	Pump Plant Replace -Station 7	28	5		-					-	
		Replace Obsolete Terminals	40	72								_
Various	-				-	-	-	-	-	-	-	-
Various	ļ <u>.</u>	Retire Line 398-537 Station 39	3	4	-	-	-	-	-	-	-	
	Roxbury	Reconductor Circuit 21N31 - Roxbury	130	62	101	2	-	-	-	-	-	
		Various Station - Off Line work	3	-	-	-	-	-	-	-	-	
		Station 375 13.8kv Switchgear	6	-	-	-	-	-	-	-	-	
Various		Underground and Overhead Development	-	-	33	11	-	-	-	-	-	
Various		Substation Distribution	674	64	236	(91)	82	(47)	-	-	-	
Various		New Customer Service	-	374	65	297	45	- 1	-	-	-	
Various		System Improvement	-	194	(3)	-	-	-	-	-	-	
Various		Street Lighting	-	-	52	28	(3)	1	3	_	-	
Various		Communication Upgrade - Various Circuits	295	16		-	(8)			_	-	
		Various Stations - Replace Roofs	69	- 10	1	-	- (0)				-	
Various		<del></del>							-			
		Station 492 13.8kv Switchgear	11	-		-	-	-	-	-	-	
		Disconnect/Reconnect Control Section Board	10	-	1	-	-	-	-	-	-	
		Station 514 - add Platform	62	-	-	-	-	-	-	-	-	
		Automate Station 250 - Mystic Station Everett	49	1	3	-	-	-	-	-	-	
		Install Digital Transient	83	1	-	-	-	-	-	-	-	
		Station 12	-	49	4	-	-	-	-	-	-	
		Terciary Network Vault - 13.8kv Vacuum Switch	-	-	-	2	5	-	-	-	-	
Mass Ave	Boston	Establish Secondary Network Vault 101 - Boston Street Work	166	22	-	-	-	-	-	-	-	
Mass Ave	Boston	Establish Secondary Network Vault 101 - Boston Street Work	5	-	_	-	-	-	_	_	-	
		Replace Power Line Carrier	270	623	89	(118)	-	_	_	_	_	
Mass Ave	Boston	Circuit 52-12 College Ave - Boston	1	-	-	-	-	-	-	-	-	
Various	DOSION	North Ave Bridge Approach	218	5		-	-	-		_	_	
			-		150				-		-	
Various		Establish Conduit System		98	153	-	-	-	-	-	-	
Various		Replace Fiber Main Distribution	358	95	10	-	-	-	-	-	-	
		Reconductor Circuit 13-10	26	16	-	-	-	-	-	-	-	
		Reconductor Circuit 13-08	41	-	-	-	-	-	-	-	-	
Mass Ave	Boston	Relieve 139-09 SB Street Work	2	-	-	-	-	-	-	-	-	
		Distribution Auto Pilot Program	150	142	5	-	-	-	-	-	-	
Various		Reconstruct Washington Street - Jamaica Plain	741	187	8	-	-	-	-	-	-	
		Install Conduit & Cabinet - W. 4th St	(3)	-	-	-	-	-	-	-	-	
		Rebuild Circuit 293-01	1	-	_	-	-	-	_	_	-	
		Rebuild Circuit 49-02,07	165	1		-	-	-	-	-	-	
		Relieve & Reconfigure Circuit 306-0	163	75	77	-	-	-		_	_	
			228	2	- 11	-	-					
\/a=!aa	-	Convert 4kv to 15kv Underground Charlestown									-	-
Various		Create Circuit 64-H4	7	2	(21)	-	-	-	-	-	-	
		Circuit 311-1406H1 Milton	147	83	-	-	-	-	-	-	-	
		Relieve Circuit 342-H4 Sudbury	73	-	-	-	-	-	-	-	-	
	Newton	Extend Circuit 292-H8 - Newton	8	-	-	-	-	-	-	-	-	
Various		NEPEX Direct Rep Proj	34	1	-	-	-	-	-	-	-	
Various		EE & SO Indirect Engineering	57	153	22	-	-	-	-	-	-	
Various		Decision Support	122	-	-	-	-	-	-	-	-	
		A/P Document Imaging	-	-	-	15	-	-	-	-	-	
Various		Metro Transmission & Distribution Equip & Tools	6	(5)	_	-	-	-	_	_	-	
Various		Transmission & Distribution Renewals Metro	228	(33)	(1)		-	-	-	-	-	
												-
Various	-	Transmission & Distribution Renewals - Substation	- 444	-	4		(1)	-	-	-	-	
Various	1	Metro Transmission & Distribution Asbestos Removal	114		-	-	-	-	-	-	-	
		Metro Transmission & Distribution Indirect Labor	38	5	_	_	-	-	-	-	-	
Various												
Various Various		Distribution Transformer Equipment	-	-	(2)		-	-	-	-	-	
Various											-	

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		Electric Design Expansion	24	216	-	-	-	-	-	-	-	
	Hyde Park	Hyde Park Canopy	231	(20)	-	-	-	-	-	-	-	
	Waltham	Fuel Tank Reinforcement - Waltham	1	-	-	-	-	-	-	-	-	
√arious		Acts of Public Authority	-	-	1	1	(3)	-	-	-	-	
Various		Various Station Replacement Failures	-	-	7	-	-	- 1	-	-	-	
Various		Various Station Replacements	113	1	1	-	-	-	-	-	-	
		Mobile Radio Equipment	69	-	-	-	-	-	-	-	-	
		Re-Feed Polaroid	79	211	(48)	-	-	-	_	-	-	
		Millis Supply Security	207	68	-	_	_	_		-	-	
Various		Radio Control sectional	110	957	657	84	119	51			-	
various												
		Station 24 Women's Locker - Crew reporting	-	21	-	-	-	-	-	-	-	
		Station 24 Men's Locker - Crew reporting	-	4	-	-	-	-	-	-	-	
		Station 20 Women's Locker - Crew reporting	-	37	-	-	-	-	-	-	-	
		Station 20 Men's Locker - Crew reporting	-	45	-	-	-	-	-	-	-	
		Secondary Network Vault - Install Distribution Switch	10	16	-	-	-	-	-	-	-	
		Terciary Network Vault - Remove/Install	66	-	-	-	-	-	-	-	-	
		Convert Station 118 - 4kv	30	47	3	101	2	- 1	-	-	-	
		Retire Station 118 - 4kv	-	-	-	-	7	-	-	-	-	
		Retire Station 118 - 4kv	120	241	34	31	-	-	_	-	-	
Mass Ave		Replace Split Fiber Main	197	131	187	-	-	-	_	_	-	
VIGOS AVE	-	Norfolk Land Acquisition	136	131	-	-	-	-			_	
	-	·		- 404								
		MATEP Supply	1	491	40	1	-	-	-	-	-	
Various		Alewife Bridge Replacement	14	-	(14)	-	-	-	-	-	-	
Various		Station 509 - Alewife Bridge	-	8	(8)	-	-	-	-	-	-	
∕arious		Station 65 - Rebuild Ring	-	32	2	50	2	(135)	-	-	-	
		Station 446 R - Replace Annunciator	14	9	28	-	-	-	-	-	-	
		Station 433 Auto Substation	9	131	22	9	-	-	-	-	-	
/arious		Various Substations Minor Additions	61	4	(1)	-	-	-	-	-	-	
		Station 514 - 15kv Switchgear	518	45	- '	-	-	-	_	_	_	
		Station 60 Transformer & Relay	5	-	-	-	-	-		-	-	
Various		Cathodic Protection	57	8	_	_	-	-		-	_	
various			26	2								-
		Station 400 - Replace Battery			-	-	-	-		-	-	
		Replace Circuit Breakers	198	27	-	-	-	-	-	-	-	
		Station A533 SCADA Cable	3		-	-	-	-	-	-	-	
		Establish Circuit 48 Reg Bldg	69	9	-	-	-	-	-	-	-	
		Install Toilet Station 51	19	1	-	-	-	-	-	-	-	
		Security Control Line Group	1	4	-	-	-	-	-	-	-	
		Act of Public Authority NW DUD	11	215	-	-	-	- 1	-	-	_	
		Station 33 Locker Room	56	(19)	-	-	-	-	-	-	-	
		Station 250 Locker Room	50	(24)	-	-	-	-	_	_	_	
		Station 402,Replace Station Server	-	- (2-1)	2	60	-	-	_	-	-	
		Various Stations - off-line work	209				-					
				-		-		-	-	-	-	
		Secondary Network Vault 86	43	8	1	17	(5)	-	-	-	-	
		Secondary Network Vault 127	19	4	1	4	(2)	-	-	-	-	
		Secondary Network Vault 132	15	6	1	4	(3)	-	-	-	-	
		New Secondary Network Vault - North End	-	5	47	3	-	-	-	-	-	
		New Secondary Network Vault - North End	-	114	65	96	30	-	-	-	-	
		Secondary Network Vault 263A&B	3	14	2	42	19	-	-	-	-	
	İ	Secondary Network Vault 316	21	4	1	4	(4)	-	-	-	-	
		Underground and Overhead Development		101	39	15	- (.)	-	_	_	-	
		Install Terciary Network Vault 662	58	1	-	- 10	-	-		_	_	
/orious	-	New Customer Service	-	1,528	72	3		5	1	-	-	-
/arious	-						(1)					
/arious		System Improvement	-	-	100	118	7	(128)	-	-	-	
		Street Lighting	-	-	11	20	(5)	1	-	-	-	
		Secondary Network Vault 16	35	28	-	-	-	-	-	-	-	
		Station 292 Load Relief	20	1	-	-	-	-	-	-	-	
		Discontinue Circuit 36	1	-	-	-	-	-	-	-	-	
		Station 202	5	-	-	-	-	-	-	-	-	
		Install 3 Phase Relays	102	(39)	2	11	-	-	-	-	-	
Various		Install Transformer Recloser	188	67			-	-	_	-	-	
	+	Secondary Network Vault 299 Perl St	-	46	14	-	-	-		-	-	
	-			35	- 14	-	-	-	-	-	-	-
	-	Relieve Circuit - Commerce Ct	114									-
		Reroute Circuit 65-H3	250	154	4		-	-	-	-	-	
		Remove Step-Downs	-	-	-	52	-	-	-	-	-	

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		New Northern Ave Duct	143	23	49	-	-	1	-	-	-	-
	Brighton	Brighton - 15kv Conversion	6	346	19	139	-	-	-	-	-	-
		Station 211 - 509 Circuit Breaker	48	2	-	(22)	-	-	-	-	-	-
		Relief Circuit 477-01 Brighton	133	27	17	-	-	-	-	-	-	-
		Act of Public Authority - 2nd Ave Reconstruction	62	102	-	-	-	-	-	-	-	_
		Street Work Bear Hollow Rd Wayland	-	42	-	-	-	-	-	-	-	-
		Purchase Power Quality	60	_	_	_	-	_	_	_	_	<b>—</b>
	Winchester	Winchester Upgrade	291	17	13	-	-	-	_	-	_	T .
	VVIIICIICSICI	Secondary Network Vault - Install Network Transformer	251	30	7	61	_		_	_	_	<b>—</b>
		Replace Network Transformer		30								
			(5)			-	-	-			-	
		Secondary Network Vault 193 A&B Station 30	97	34	-	-	-	-	-	-	-	
		New Secondary Network Vault 102	-	63	-	-	-	-	-	-	-	
		Replace Network Transformer	-	62	1	7	-	-	-	-	-	
		Station 450 ALD Modification	1	-	-	-	-	-	-	-	-	
		Station 470 ALD Modification	1	2	-	-	-	-	-	-	-	
		Station 416 ALD Modification	2	2	-	-	-	-	-	-	_	
	Quincy	Act of Public Authority - South Artery Quincy	226	- 1	-	-	-	_	_	-	-	
Various		Metro Transmission & Distribution Equipment & Tools	52	_		_	_	_	_	_		
Various		Transmission & Distribution Renewals - Metro	11,184	(39)	92	-	-	-	_	-	-	
	+		-	- ' '	- 92				_	_		_
Various		Metro Transmission & Distribution Paving	410	-		- 4	-	-	-		-	-
Various		Transmission & Distribution Renewals Substation	-	-	8	1	-	-	-	-	-	
Various		Metro Transmission & Distribution Asbestos Removal	796	96	-	-	1	-	-	-	-	
Various		Indirect Engineering - Distribution	-	-	(45)	-	-	-	-	-	-	
Various		Metro Transmission & Distribution Indirect Labor	2,259	-	-	-	-	-	-	-	-	
Various		Distribution Transformer Equipment	-	-	86	43	55	2	-	-	-	
Various		Garage Equipment	29	13	-	-	-	-	-	-	-	
Various		Alterations & Improvements	1,020	132	_	_	-	_	_	_		
Various		Building Service Equipment	26	1		-	-	-	_	_	-	
		Framingham Service Center Truck Canopy	73	38		-	-	-	_	_	_	
Framingham												-
Watertown		Watn Matls Mgmt Center Space Expansion	16	(12)	-	-	-	-	-	-	-	
	Somerville	Replace Emergency Generator - Somerville	37	10	-	-	-	-	-	-	-	
		Environmental Risk Management System	-	-	-	2	-	-	-	-	-	
Various		Acts of Public Authority	-	239	166	2	10	-	-	-	-	
		Replace/Repair Transformer	-	-	122	1	-	-	-	-	-	
		Various Station Equipment/Tools	-	-	11	-	-	-	-	-	-	
		Replace Wear/Tear/Obsolete	-	-	43	-	-	-	-	-	-	
		Station 467 - 13.8kv Switchgear	-	726	25	2	2	_	_	_	_	
		Station 483 - 13.8kv Switchgear	-	602	27	(2)		-	_	_	-	
		Replace Transformer Station 566	-		40	(2)			-	_		
Mada			-			-		-			-	
Various		Upgrade Transmission Power Syystem		266	170						-	
Various	_	Real Time 148-522XY	-	57	38	-	-	-	-	-	-	
Various	Boston	South Boston Demo	-	138	684	82	2	23	2	-	-	
		Station 373 Switchgear Transfer	-	104	4	-	-	-	-	-	-	
		Install Ventilation Station 28	-	13	-	-	-	-	-	-	-	
		Expand Station 488	- 1	2	95	34	8	-	-	_	-	
Various	Wellesley	Reconductor Wellesley Circuit 41-212	-	(3)	_	-	-	111	_	_	-	
		SCADA Control for Various Locations	-	251	7	2	1	-	_	_	_	
		Install Power Quality Meter	_	46	121	1	- '	-	_	_	_	
\/orious				40	121							
Various		Station 488	-			- (0)	5	-		-	-	
Various		Replace Breakers Station 224	-	45	36	(9)	-	-	-	-	-	
Various		Load Growth/Improvement/Reliability	-	28	55	-	-	-	-	-	-	
		Station 492 Replace Transformer	-	-	91	49	-	-	-	-	-	
		Replace Network Transformer	-	- 1	59	8	-	-	-	-	-	
		Station 433 New H9 Circuit	-	8	7	13	1	-	-	-	-	
Various		Station 446R Install Distribution Network	-	111	56	-	-	-	-	-	-	
		Station 514N Replace Transformer	-		9	161	-	-	_	_	-	
		Purchase Structure	-	27	3		-	-	_	-	_	
Various	-											-
Various	-	Establish Multi Customer13:BCH	-	177	(7)		-	-	-	-	-	
		Improve Reliability Chestnut Hill	-	99	-	-	-	-	-	-	-	-
		Station 250 Transformers 110F	-	645	(387)	-	-	-	-	-	-	
		Electric Document Management System	-	262	47	-	-	-	-	-	-	
		Establish Secondary Network Vault 284-64-70	-	- 1	59	34	23	5	-	-	-	
											1	
		Replace Network Transformer/Protectors	-	51	-	-	-	-	-	-	-	

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		New Customer Business	-	3,037	2,824	438	(14)	(13)	(4)	-	-	-
		Minor Capital Additions	-	2,692	992	46	66	-	1	-	-	_
Various		Street Lighting	-	670	245	44	-	2	2	-	-	-
		Testboard Replacement	-	1	32	-	-	-	-	-	-	
		Infrared Systems	-	57	-	-	-	-	-	-	-	
		Establish New Terciary Network Vault 6194	-	4	81	-	3	-	-	-	_	
		ZMWE EWPL @ FED RES	-	140	(100)	-	-	3	_			
		Establish Secondary Network Vault 245 Beacon St	-	6	42	6	-	-				
\												
Various		Extend 146-H8 Wal/Shar	-	179	151	22	-	-	-	-	-	
		Overhead Oil Switch 4kv Replacement	-	139	107	-	(1)	-	-	-	-	
		Overhead Oil Switch 4kv Replacement	-	45	6	3	-	-	-	-	-	
		Overhead Oil Switch 4kv Replacement	-	119	-	-	-	-	-	-	-	
		Establish Circuit 50 Boston Police Headquarters	-	-	1	92	-	-	-	-	-	
		Establish Circuit 49 Mass College	-	2	114	-	-	-	-	-	-	
		Replace Split Fiber Main Distribution	-	348	75	_	_	-	_	-	_	
		Replace Power Line Carrier L325,L316	-	469	247	-	-	-	-	_		
				3	-	-	-					
0 111 - 00/- 111-		Establish Secondary Network Vault 189 Station Work	-									
Somerville/Walth	ŧ .	Establish Secondary Network Vault 189 Street	-	72	6		-	268	119	-		
		Establish Circuit 53 New England Telephone	-	-	51	8	-	-	-	-	-	
		Improve Circuit 416-H3	-	4	14	56	-	-	-	-	-	
Various		Improve Reliability	-	76	210	3	251	9	-	-	-	
Various		Switchyard Upgrade Station 650	-	1,683	879	-	-	-	-	-	-	
	Newton	Station 369 - Newton	-	-	32	-	-	-	-	-	-	
		SONET Test Equipment	-	34	-	-	-	-	-	_	-	
	Sudbury	Willis Rd Sudbury	-	-	113	-	-	-	-			
Mass Ave	Oddbury	Station 20 Prefab Building	-	-	51	-	-	-	-			
IVIASS AVE											_	
		Station 146 Storage Building	-	-	9	(1)	-	-	-	-	-	
		Establish Distribution Circuit	-	-	3	2	-	-	-	-	-	
		Auto Bus Restoral	-	-	37	-	-	-	-	-		
		Replace Network Transformer	-	-	-	267	3	-	-	-		
		Establish Secondary Network Vault 289	-	-	109	1	-	-	-	-		
Various	Canton	Turnpike St - Canton	-	24	1	69	1	12	-	-	-	
		Hydran Dissolved Gas System	-	29	_	-	_	-	-	_	_	
		Carlisle Circuit Upgrade	_	106	183	6	-	-	-			
		INAR ZMWE @FED RES	-	100	2		-	(3)				
	0					- 45		- '	-		-	
	Somerville	Upgrade Somerville Supply	-	217	32	45	2	-	-	-	-	
		Station 282 Install Distribution Hydrant Vaccum	-	-	-	-	1	-	-	-	-	
		Network Transformer Emersion	-	-	32	-	98	-	-	-	-	
Somerville/Walth	á .	North End Conversion	-	25	-	-	71	185	184	-	-	
		Information Service Indirect Engineering	3,542	3,413	-	-	-	-	-	-	-	
Various		Field Services Systems	-	-	-	630	87	25	-	-	-	
		Purchase Equipment & Tools	-	68	_	-		-	-	_	_	
Various		Like for Like Replacement	(2)	13,188	597	(4)	(5)	(18)	_	_	_	
Various		Paving	- (2)	-	8	3	- (5)	- (10)				
												_
., .		Purchase Equipment & Tools	-	17	6	-	-	-	-	-	-	
Various		Indirect Engineering & Supervision	-	2,167	-	-	-	-	-	-	-	
Various		Indirect Engineering & Supervision N/E	-	2,592	-	-	-	-	-	-	-	
Various		Purchase Equipment & Tools	-	32	4	-	-	-	-	-	-	
Various		Indirect Engineering & Supervision	-	4,967	-	-	-	-	-	-	-	
Various		Purchase of Distribution Transformers	-	-	597	626	564	360	155	-	-	
		Alter/Improve Off-Service	-	615	-	-	-	-	-	-	-	
		Building Service Equipment	-	26	_	-		- 1	-	_	_	
	-	Design Project Management		-		(7)	-					
Various												
Various	-	Acts of Public Authority	-	-	199	133	26	93	(141)	-		
., .		Lab Blanket	-	-	393	27	-	-	-	-		
Various		Failure in Service	-	-	237	186	-	-	-	-	-	
		Various Station Portable Tools	-	-	70	27	-	-	-	-	-	
		Replace/Wear/Tear/Obsolescence	-	-	82	11	-	-	-	-	-	
		Retire Station 118 - 4kv	-	-	3	6	-	-	-	-	-	
Mass Ave		Major Customers SAS	-	-	10	4	10	-	-	_		
IVIGOS AVE		Extend Circuit										
\/a=!aa	-		-	-	221	21	-	-	-	-		
Various		Rebuild MATEP Line	-	-	832	134	-	-	-	-	-	
Various		Retire Station 303	-	-	38	2	-	-	-	-	-	
Framingham/Wal	1	Relocate Circuit 282-H8	_	-	1	2	-	657	46	-	_	

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		Install Network Transformer	-	-	1	6	155	1	-	-	-	-
Mass Ave	Boston	Boston College New Supply	-	-	84	205	116	-	10	174	434	_
Framingham/Wal	Newton	Improve Newton Power Supply	-	-	205	21	-	22	-	-	-	-
·		Reconductor Circuit 516-08	-	-	163	(2)	-	-	-	-	-	_
		Establish Secondary Network Vault 29	-	-	58	6	-	-	-	-	-	_
	Boston	Secondary Network Vault - Huntington - Boston	-	-	18	56	-	-	-	-	-	_
		Station 329 Backflow	-	-	8	33	-	_	-	-	-	_
		Station 282 Backflow	-	-	6	1	-	_	-	-	-	_
		Establish Circuit 65-H5	-	-	-	293	-	_	_	-	_	_
Various		Station 65 - 4kv	-	-	16	99	-	2	-	-	_	_
Various		Retire Station 65	-	-	354	6	-			-	_	_
		Station 125, 135 Replace Breaker	-	-	110	11	9	_	_	-		_
Various		Replace Directional Relays			32	15	5	3				
Various					1	-		- 3	-	-		
		Replace Fiber Optic			107			4	-			
Various		Replace Station 33 Roof	-	-		-	-		-	-		-
		Monitoring Transformers	-	-	103	-	- 4	-	-	-		-
., .		Establish Station 35	-	-	70	-	1	-	-	-		-
Various		Station 211 - Inst Digital Transient Recorder	-	-	22	-	4	-	-	-	-	_
		Edgar Station Roof	-	-	32	-	-	-	-	-	-	-
		Install Fiberoptic	-	-	11	-	-	-	-	-	-	-
		Establish Station 31	-	-	55	6	(65)	-	-	-	-	-
Various		Install Oil Containment	-	-	2	-	3	-	-	-	-	-
Various		Cathodic Protection	-	-	4	-	8	-	-	-	-	-
Various		New Customer Business	-	(42)	3,744	2,994	708	17	(14)	2	-	-
Various		Minor Capital Additions	-	3	2,919	897	180	2	2	-	-	-
Various		Street Lighting	-	-	372	90	36	9	4	-	-	-
		Replace Overhead 4kv Oil Switch	-	-	93	-	(1)	-	-	-	-	-
		Power Quality Meter	-	-	40	-	-	-	-	-	4 434	-
		Relieve Circuit 586-161H	-	-	125	72	- 1	-	-	-		_
		Station 2 - 13.8kv Switchgear Bus	-	-	505	4	6	-	-	-		-
		Dobly Relay Test	-	-	77	10	(5)	-	-	-		-
		Replace Circuit Breaker	-	-	549	14	- 1	-	-	-		-
Mass Ave		Convert Station 15 Station Work	-	-	20	81	152	1	-	-	-	-
Mass Ave		Convert Station 15 Street Work	-	-	1,722	1,719	84	1	_	_	(18)	_
Somerville/Walth	Natick	Natick Conversion	-	-	-	70	29	64	8	-	- (10)	_
Como mo man	- radion	Oil Switch Replacement - S. West	_	-	20	-	(1)	-	-	-	_	_
Mass Ave		Convert Station 14 Station Work	-	-	92	110	205	5		_	-	_
Mass Ave		Convert Station 14 Street Work	-	-	830	686	87	24	3	-		_
IVIASS AVE	Boston	Terciary Network Vault 684 - Boston	-		-	246	-	- 24		-		
	Boston	Terciary Network Vault 6084 - Boston	-	-		216	(19)	-		-		
	DOSION	Establish Secondary Network Vault 568			9	145	10	-			_	
				-	3	145	- 10	-	-	-	-	
		Retire Secondary Network Vault 386										
\		Install Fiberoptic	-	-	602	-	-	-	-	-		
Various		North Communications	-	-	1,066		240	-	-			(1
		Purchase Infrared Camera	-	-	- 15:	57	-	-	-	-		-
		Capacity Upgrade Station 36	-	-	104	-	-		-	-	-	-
Mass Ave		Convert Station 315 Station Work	-	-	-	16	88	10	23	-	-	-
Mass Ave		Convert Station 315 Street Work	-	-	-	3,432	655	(1)	-	-	-	-
Mass Ave		Convert Station 477 Station Work	-	-	-	-	-	20	24	-	-	-
Mass Ave		Convert Station 477 Street Work	-	-	-	3,984	1,431	19	1	-	-	_
		Establish Secondary Network Vault 581	-	-	-	181	-	1	1	-		-
		Replace Transformer 24B	-	-	159	-	-	-	-	-	-	-
		MATEP Metering	-	-	17	4	- 1	0	-	-	-	-
Various	Hopkinton	Hopkinton Station 126 - Station Work	-	-	60	132	609	4,572	628	5	(1)	-
	i i	Retire Transformer 24B	-	-	-	33	-	-	-	-		-
		Station 320 Control/Relay	-	-	4		-	-	-	-	-	-
		Establish Terciary Network Vault 6190	-	-	-	111	338	-	-	-	-	-
		Detector Terciary Network Vault 607	-	-	44	1	-	-	-	-		
		Alternate Dispatch	-	-	6	- '	-	-	-	-		
		Retire Secondary Network Vault 281		-	-	1	-	-	7	-		
Various		Establish Station 44	-	-	54	722	- 1.022	-	-	-	-	- (4
Various		Keep Cost	-	-	167	733	1,022	3	-	-	-	(4
		Replace Terciary Network Vault 6188	-	-	190	(28)	-	-	-	-	-	-
		Replace Terciary Network Vault 6122	-	-	155	-	-	-	-	-	-	-

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Waltham		Relocate Overhead to Underground	-	-	-	5	294	473	102	-	(89)	(16
Various		Station 75 Neutral Transformer	-	-	-	75	86	2	-	-	-	-
		Paging System	-	-	5	-	-	-	-	-	-	-
		Information Service Indirect Engineering	-	-	3,949	4	-	-	-	-	- [	-
		Equipment & Tools	-	-	1	-	-	-	-	-	-	-
		Like for Like Underground	-	(2)	8,301	335	5	-	-	-	-	-
Various		Paving	-	-	806	1,406	2	-	-	- 1	-	-
Various		Like for Like Overhead	-	-	1,798	155	(18)	(16)	-	-	-	-
		Indirect Engineering	-	-	2,377	-	- 1	- 1	-	-	-	-
		Indirect Engineering & Supervision	-	-	2,618	3	-	-	-	-	-	-
		Equipment & Tools	-	-	14	(1)	-	-	-	-	-	_
		Indirect Engineering	-	-	4,968	- 1	-	-	-	-	-	-
		Purchase of Distribution Transformers	-	-	4,305	8,231	341	-	-	-	-	-
		Buildings/Alterations	-	-	-	1	-	-	-	-	-	-
		Service Equipment	-	-	-	3	-	-	-	-	-	-
	Woburn	Woburn Service Center Shut Down	_	-	-	4	-	-	-	-	-	_
		Overhead Customer Work Order	_	-	-	39	-	-	-	-	-	-
		Purchase of Miscellaneous	_	-	_	11	-	-	-	-	-	_
Various		Cutoffs/Restorations	-	-	-	(181)	(63)	246	188	(469)	-	_
Somerville/Walth		Replace Station 47-2	-	-	-	54	67	-	-	(403)	-	
Somerville/Walth		Replace Station 47-2	-	-		188	139	109	- 4			
Various		Replace Transformer Station 211	-	-	-	294	2,214	45	1	-		
v al lous		Establish Terciary Network Vault 6196	-	-	-	154	16	- 45	- 1	-		
		Establish Secondary Network Vault Station 427	-	-		30	8		-	-		
		Split Fiber Main Replacement	-	-	-	135	- 8		-	-		
1/		Retire Transformer Secondary Network Vault 24	-	-	-	3	-	-	-	-		-
Various		Police & Paving	-	-	-	3,356	2,461	2,696	-	-		-
		Distribution Transformers	-	-	-	163	40	-	-	-		-
		Survey & Records Supervisor Indirects	-	-	-	6,180	-	-	-	-		
Various		Preliminary Capital Engineering Indirect	-	-	-	277	393	66	35	43	_	-
		Cust Div Buildings	-	-	-	154	55	-	-	-	-	-
Mass Ave		Customer Distribution Street Work	-	-	-	3,645	5,873	125	(26)	13		-
		Customer Distribution Station	-	-	-	980	210	1	-	-	-	-
Various		Street Lighting	-	-	-	273	92	24	1	-	-	-
		System Distribution Station work	-	-	-	119	62	-	-	-	-	-
Various		System Distribution Street Work	-	-	-	13,362	1,485	433	-	-	(16)	-
Mass Ave		Secondary Network Vault - 404	-	-	-	10	123	-	-	-	-	-
		Secondary Network Vault - 415	-	-	-	16	287	-	-	-	-	-
		Establish Station 414	-	-	-	49	23	-	-	-	-	-
		Retire Secondary Network Vault 57 A&B	-	-	-	293	(107)	-	-	-	-	-
		Establish Terciary Network Vault 6201	-	-	-	112	234	1	-	-	- [	-
		Replace Secondary Network Vault 34	-	-	-	-	94	-	-	- 1	- [	-
		Implement Reliability Center Maintenance	-	-	-	85	58	-	-	-	-	
Various	Watertown	Galen St Reconductoring Watertown	-	-	-	-	312	92	1	-	-	
		Replace Aerial Cable	-	-	-	75	9	-	-	-	-	-
		Secondary Network Vault - 387	-	-	-	133	-	-	-	-	-	
Mass Ave		Establish Terciary Network Vault 6200	-	-	-	30	112	-	-	-	_	-
		Establish Terciary Network Vault 6199	-	-	-	100	24	-	-	-		-
Mass Ave		Convert Station 324 - Station Work	-	-	-	6	4	106	4	-		
Mass Ave		Convert Station 324 - Street Work	-	-	-	1,111	240	24	-	1		
IVIAGO AVE		Re-Establish Secondary Network Vault 390B	-	-		- 1,111	53		-	- '		
		Replace Terciary Network Vault 67	-	-	-	145	-	-	-	-		
Mass Ave			-	-		4	322	5	-			
1V1433 AVE		Establish Terciary Network Vault - Courthouse Establish Terciary Network Vault 6198	-	-	-	46	211	- 5	-	-		
Μαρο Ανα						-						
Mass Ave		Convert Station 10 - Street Work	-	-	-	1,415	177	2	-	-	_	
Mass Ave	Nasalbass	Convert Station 10 - Station Work	-	-	-	11	91	7	-	-		
Various	Needham	Improve Reliability - Needham	-	-	-	109	99	17	-	-		
Mass Ave		Establish Terciary Network Vault 6203	-	-	-	-	-	116	-	-		
	Hopkinton	Hopkinton Station 126 - Street Work	-	-	-	11	10	988	64	-		
Various		Station 479 - station Work	-	-	-	36	-	-	-	-	-	
		Storm Keep Cost	-	-	-	14	7	-	-	-	-	
Various		Keep Cost	-	-	-	-	14	1	14	1	-	-
Walpole		Act of Public Authority - Underground Westwood	-	-	-	265	516	(10)	-	-	(411)	(1
vvaipole									1			

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mass Ave		Convert Station 8 - Station Work	-	-	-	1	5	8	29	-	- 1	
Mass Ave		Convert Station 8 - Street Work	-	-	-	1,935	2,007	73	2	-	3	
Mass Ave		Convert Station 283 - Station Work	-	-	-	609	(609)	7	-	-	- 1	
Mass Ave		Convert Station 283 - Street Work	-	-	-	3,547	1,747	16	8	-	-	
Mass Ave		Convert Station 306 - Station Work	-	-	-	7	5	26	2	2	_	
Mass Ave		Convert Station 306 - Street Work	-	-	-	5,949	2,258	78	13		-	
Mass Ave		Convert Station 340 - Station Work	_	-	_	-	-	20	62	_	_	
Mass Ave		Convert Station 340 - Station Work	-			3,505	1,053	45	3		1	
Various		Retire Hardware/Software	-	-	-	1	-	-	-	-	-	
		Purchase Vehicle	-	-	-	46	-	-	-	-	-	
		Lab Equipment	-	-	-	99	-	-	-	-	-	
		Real Estate	-	-	-	71	-	-	-	-	-	
		Plant Adjustment	-	-	-	233	-	-	-	-	-	
Mass Ave		Establish Secondary Network Vault 436	-	-	-	-	88	162	39	3	-	
Various		Split Fiber Main Replacement	-	-	-	-	138	104	-	-	-	
		Split Fiber Main Replacement	-	-	-	-	50	-	-	-	-	
		Establish Secondary Network Vault 549	-	-	-	-	84	-	-	-	-	
Mass Ave		Establish Secondary Network Vault 386	-	-	_	-	1	91	1	_	_	
Various		NYNEX To Fiber Conversion	-	-		-	477	27	8			
								6	1			
Mass Ave	-	Establish Terciary Network Vault 6204	-	-	-	-	1				-	
Mass Ave		Establish Secondary Network Vault 589	-	-	-	-	9	4	1	-	-	
Mass Ave		Establish Secondary Network Vault 582	-	-	-	-	178	(4)	1			
Mass Ave		Convert Station 454 Street Work	-	-	-	-	2,284	946	257	39	-	
Mass Ave		Establish Terciary Network Vault 6205	-	-	-	-	100	3	1	-	-	
		System Event Track	-	-	-	-	126	-	-	-	-	
Mass Ave		Establish Terciary Network Vault 6178	-	-	-	-	-	99	68	-	-	
		Terciary Network Vault 641D - replacement	_	-	_	-	1	-	-	_	-	
Mass Ave		Establish Secondary Network Vault 301B	-	-	-	-	-	4	-	_		
Mass Ave		Establish Secondary Network Vault 441	_	-	_	-	_	23	89	_	_	
Mass Ave		4KV Somerville Primary Network Unit Street Work	-			-	843	261	2			
viass Ave											70	
, .		Fiberoptic Expansion	-	-	-	-	-	-	-	-	70	
Various		Line Transformers	-	-	-	-	8,308	234	-	-	-	
Mass Ave		Survey & Records	-	-	-	-	8,511	510	87	-	-	
Various		Preliminary Engineering	-	-	-	-	230	-	-	-	-	
Various		Customer Distribution Street Work	-	-	-	-	2,570	154	(19)	7	(1)	
Various		Customer Distribution Station	-	-	-	-	413	9	2	-	-	
Various		Street Lighting	-	-	-	-	146	28	1	-	-	
Various		System Distribution Station Work	-	-	-	-	59	13	2	-	-	
Various		System Distribution Street	-	-	_	-	11,231	500	23	_	_	
Various		System Distribution Street	-	-	-	39	,20.	-	-	_	_	
Various		Survey & Records			_	-	2,326	2,463	856	19	4	
	Dovbuni							,				
Mass Ave	Roxbury	4kv Upgrade Roxbury	-	-	-	-	656	4	-	-		
Mass Ave		Establish Secondary Network Vault 447	-	-	-	-	-	8	136	-	-	
Various		Station 450 Sound Walls	-	-	-	-	131	4	-	-	-	
Mass Ave		Establish Network Vault 419	-	-	-	-	161	3	-	-	-	
Mass Ave		Replace Transformer Secondary Network Vault 82	-	-	-	-	-	1	-	-	-	
Mass Ave		Establish Terciary Network Vault 6206	-	-	-	-	2	224	-	-	-	
		B-D St. Ex-Haul Rd	-	-	-	-	5	-	-	-	-	
Mass Ave		Establish Terciary Network Vault 6207 A&B	-	-	_	-	3	144	1	_	-	
		Secondary Network Vault 231 Increase Transformer Size	-	-	_	-	69	-	- '	_	-	
Mass Ave		Secondary Network Vault 231 increase Transformer Size	-			-	-	38				
		•	-	-		-	9	30	-		-	
Mass Ave	-	Establish Secondary Network Vault 224A Arch St										
Mass Ave		Abandon Secondary Network Vault 233 A&B	-	-	-	-	4	16	6	-	-	
Mass Ave		Establish Terciary Network Vault 6208	-	-	-	-	-	186	-	-	-	
/arious		Install Network Transformer	-	-	-	-	-	60	3	-	-	
Mass Ave		Replace Network Transformer	-	-	-	-	-	79	2	-	-	
Mass Ave		Secondary Network Vault 567	-	-	-	-	-	10	17	-	-	
Mass Ave		Secondary Network Vault 211	-	-	-	-	-	5	1	-	-	
		Establish Terciary Network Vault 6202	-	-	_	-	-	155	3	_	_	
	-	Establish Secondary Network Vault 481	-	_	-	-	_	182	-	-		
Mass Ave		LOUGHIGH OCCORDARY INCLINION VAULETUL	_	-	_	-	-		-		-	
Mass Ave Mass Ave		Secondary Network Vault 37 Changoout					1	ا ن	I		1	
Mass Ave Mass Ave Mass Ave		Secondary Network Vault 57 Changeout	-	-	-	-	-	3	- 106	- 1	-	
Mass Ave		Secondary Network Vault 37 Changeout Secondary Network Vault 56 Changeout Police	-	- - -	- - -	- -		3 1 1,510	- 106 13	- 1 24	- - 21	

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		Preliminary Engineering	-	-	-	-	-	221	78	-	-	-
Mass Ave	Roxbury	Convert Primary Network Unit 311 - Roxbury	-	-	-	-	-	1,926	236	-	-	-
Mass Ave		Establish Terciary Network Vault 6209	-	-	-	-	-	269	1	24	-	-
Mass Ave		Improve Circuits	-	-	-	-	-	278	526	-	-	-
Mass Ave		13.8kv Brookline Village	-	-	-	-	-	272	74	-	-	-
Mass Ave		Convert Primary Network Unit 32	-	-	-	-	-	2,193	49	2	104	23
Mass Ave		Convert Circuits Station 293	-	-	_	_	-	1,046	301			-
Mass Ave		Remove Secondary Network Vault 244 A&B	-	-	-	-	-	205	25	1	-	_
Various		East Fifth Split Fiber Main Conversion	_	_	_	_	_	274	-	- '		
Various		Split Fiber Main Replacement	_				-	385	15	-		
			-	-	-	-					-	
Somerville/Walth	č	Convert Step Down Transformer	-	-	-	-	-	493	12	-	-	-
Mass Ave		Convert 284-01	-	-	-	-	-	374	1	-		-
Various		A Street	-	-	-	-	-	116	299	62	1	-
Waltham		US Gov National Park	-	-	-	-	-	4	1	-	-	-
Walpole		Reebok HQ	-	-	-	-	-	(86)	62	38	-	-
Various		Station 450 Expansion	-	-	-	-	-	7	1,715	1,953	2,158	118
Mass Ave		120 South Hampton St	-	-	-	-	-	2	-	-	-	-
Mass Ave	Boston	88 Exeter St - Boston	-	-	-	-	-	1	-	-	-	-
Waltham		Burlington Rd - Bedford	-	-	-	-	-	45	171	-	-	-
Mass Ave		Establish secondary Network Vault 200	-	-	-	-	-	1	177	-	-	_
Mass Ave		Establish Terciary Network Vault 6211	-	-	_	-	-	- '	270	-	-	_
Mass Ave		Establish Terciary Network Vault 6212	_	_	_	_	-	1	229	-	_	_
Mass Ave		Establish New 496-H3	-	-	-	_	-	794	-		-	
		Station 250 Doble Institute		-	-	_	-	63	166	16	1	
Various			+		-							
Various		Hazeltine Monitoring	-	-	-	-	-	130	198	243	267	-
Various		Street Light Work	-	-	-	-	-	44	(14)	-	-	-
Various		SCADA Y2K	-	-	-	-	-	594	(18)	-	-	-
Mass Ave		New Customer - Everett St _ Brighton	-	-	-	-	-	171	-	-	-	-
Mass Ave		New Customer - Bay State Rd	-	-	-	-	-	65	88	11	4	58
Mass Ave		New Customer - Tremont St	-	-	-	-	-	7	-	-	-	-
Mass Ave		Secondary Network Vault 582	-	-	-	-	-	34	1	-	-	-
Mass Ave		Station 481	-	-	-	-	-	153	- 1	-	-	-
Mass Ave		Secondary Network Vault 436	-	-	-	-	-	42	59	-	-	-
Mass Ave		Terciary Network Vault 6208	-	-	-	-	-	120	22	7	-	_
Mass Ave		New Customer - Lafayette PI	-	-	_	_	-	86	8	-	_	_
Waltham		Act of Public Authority - Overhead to Underground S. Loomis	_	_	_	_	-	4	-	6	_	_
Waltham		MWRA Pumping	_	_	_	_	_	171	(41)	-		
Waltham			-	-	_	_	-	254	9	-		
		Villages						88	-			
Waltham	\A/= 4 ====	Cronins Landing	-	-	-	-	-			-	-	
Waltham		Waltham Woods	-	-	-	-	-	285	36		-	-
Waltham		MWRA Shaft SA Temp	-	-	-	-	-	(91)	47	5	-	-
Waltham		Boston College	-	-	-	-	-	171	15	3	-	-
Waltham		Pine Meadows Carlisle	-	-	-	-	-	26	1	-	-	_
Waltham		Astra Corp	-	-	-	-	-	8	388	2	-	-
Waltham		Cabot St - Overhead & Underground	-	-	-	-	-	1	-	-	-	-
Somerville	Woburn	Altron Inc - Woburn	-	-	-	-	-	89	4	-	-	-
Somerville		Station 487 - Sun Micro	-	-	-	-	-	153	2	-	-	-
Somerville		Somerville Housing Authority - Mystic	_	-	-	_	-	14	12	1	-	-
Framingham	Framingham	175 Crossing Blvd. Framingham	-	-	-	-	-	140		- '	-	_
Framingham	Natick	TJX Expansion Natick	_	_	_	_	_	-	12	135	4	
		Staples Crossing Blvd - Framingham	-	-	-	-	-	115	- 12	- 135	- 4	
Framingham			_		-							
Framingham	Natick	The Sanctuary - Cottage St. Natick	-	-	-	-	-	277	2	(28)	3	12
Mass Ave		New Customer 1601 Wash St	-	-	-	-	-	11	118	53	-	-
Waltham		Sun Micro System	-	-	-	-	-	(110)	88	19	-	-
Waltham		Raytheon 2nd Line	-	-	-	-	-	127	-	-	-	-
Waltham		Overhead to Underground Bedford & Lexington	-	-	-	-	-	-	9	2	-	-
Mass Ave		Planet Hollywood	-	-	-	-	-	11	164	(1)	1	1
Mass Ave		BU Medical Center	-	-	-	-	-	1	39	1	- 1	-
Mass Ave		25 Huntington Ave	-	-	-	-	-	3	(37)	11	-	-
Mass Ave		Underground Circuit Emergency Replacement	_	-	-	-	-	2,497	327	2	-	-
Mass Ave		Underground Reliability Improvements	-	-	-	-	-	297	28	-	_	
Mass Ave		Overhead Reliability Improvements	-	-	-	_	-	837	204	4	18	10
			_									
Mass Ave		Overhead Reliability Improvements	-	-	-	-	-	231	23	- 40	-	-
Mass Ave		Station Breaker/Transformer Failure	-	-	-	-	-	597	154	12	-	-

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mass Ave		MASS AV FSA/Technical Support	-	-	-	-	-	64	1	-	-	-
Somerville		Underground Corrective/Emergency Replacement	-	-	-	-	-	1,056	36	-	-	-
Somerville		Underground Reliability Improvements Somerville/Waltham	-	-	-	-	-	82	45	4	-	-
Somerville		Overhead Corrective/Emergency	-	-	-	-	-	926	101	3	16	13
Somerville		Overhead Reliability Improvements	-	-	-	-	-	139	62	6	-	5
Various		Station Breaker Transformer Failure	-	-	-	-	-	134	130	5	8	_
Somerville/Waltha		SOMER/WALTH FSA - Technical Support	-	-	-	-	-	67	10	-	-	-
Framingham/Wal		Underground Corrective/Emergency Replacement	-	-	-	-	-	344	35	4	-	_
Framingham/Wal		Underground Reliability Improvements	_	_	-	_	-	1	_	-	_	_
Various		Overhead Corrective/Emergency	_	-	-	_	-	384	70	7	5	15
Various		Overhead Reliability Improvements	_	_	_	_	-	787	(143)	1	-	- '`
Framingham/Wal		FRAM/WAL - Technical Support	_	_	_	_	_	98	96			
Mass Ave		Underground Keep Cost Mass	_	_	_	_	-	555	30	-		('
Mass Ave		Keep Cost - Mass Ave	-	-	-	_	-	79	7	-	-	
			-		-	_	-				1 102	177
Mass Ave		New Customer - Mass Ave	-	-	-	-		1,530	1,317	754	1,103	
Mass Ave		Residential Development - Mass Ave	-	-	-	-	-	11	30	30	-	-
Mass Ave		Temporary Customer- Mass Ave	-	-	-	-	-	21	(32)	60	-	-
Mass Ave		Volume Sales New Customer - Mass Ave	-	-	-	-	-	731	342	114	8	1
Mass Ave		Volume Sales Temporary Customer Mass Ave	-	-	-	-	-	(7)	(2)	24	-	-
Mass Ave		Volume Sales Cable TV Mass Ave	-	-	-	-	-	-	-	1	-	-
Mass Ave		MASS AV FSA Technical Support	-	-	-	-	-	283	254	2	-	-
Mass Ave		MASS AVE FSA Station Improvement	-	-	-	-	-	78	60	1	-	-
Somerville	Somerville	New Customer Somerville	-	-	-	-	-	635	497	14	-	-
		Residential Development Somerville	-	-	-	-	-	140	177	6	-	-
		Temporary Customer Somerville	-	-		_	-	(13)	(71)	3	33	_
		Volume Sales - New Customer Somerville	-	-	-	_	-	518	177	13	-	_
		Volume Sales Temporary Customer Somerville	_	_			_	(13)	(2)	10		
			-		-				5	10	3	
		Volume Sales Cable TV Somerville		-	-		-	-				-
		Volume Sales Single Phase Service Overhead Somerville	-	-	-	-	-	-	-	1	-	-
		Somerville Customer Operations Technical support	-	-	-	-	-	153	140	-	-	-
		New Customer Framingham	-	-	-	-	-	192	106	21	-	-
		Residential Development Framingham	-	-	-	-	-	488	309	67	18	-
Framingham	Framingham	Temporary Customer Framingham	-	-	-	-	-	14	5	-	1	-
Framingham		Volume Sales New Customer	-	-	-	-	-	240	162	10	-	-
Framingham	Framingham	Residential Customer - Framingham	-	-	-	-	-	5	-	-	-	-
Framingham	Framingham	Volume Sales Temporary Customer Framingham	-	-	-	-	-	-	(1)	-	- 1	-
Framingham	Framingham	Underground Services - Framingham	-	-	-	-	-	-	- ` `	1	-	_
		Technical Support Framingham	-	-	-	-	-	171	99	-	-	_
Mass Ave		Street Light Add/Relocate	-	-	-	-	-	548	85	(11)	_	_
Various		Street Light Modernization	_	-	-	_	-	233	8	(2)		_
Mass Ave		Street Light Removals	_	_	-	_	-	28	(18)	(33)	1	2
Various		Street light - No Current Replace	-	-			-	-	(10)	2	- '	
		· ·	-		-		-		10	1	-	
Somerville/Waltha		Underground Keep Cost Somerville/Waltham	-	-	-			89				
Framingham/Wal		Underground Keep Cost Framingham/Waltham	-	-	-	-	-	10	-	-	-	- '0
Somerville/Waltha		Overhead Keep Cost Somerville/Waltham	-	-	-	-	-	150	6			3)
Various		Overhead Keep Cost Framingham/Waltham	-	-	-	-	-	183	19	1	(8)	(9
Various		Street Light Knock Downs	-	-	-	-	-	1	-	-		-
Mass Ave		C&S Minor System Improvements	-	-	-	-	-	3,860	2,403	382	74	13
Mass Ave		C&S Minor System Improvements	-	-	-	-	-	743	826	13	-	-
		Plant Adjustment	-	-	-	-	-	-	-	-	(14)	-
		System Failures/Replacements	-	-	-	-	-	-	-	-	- 1	945
Mass Ave		Underground Network Feeder Replacement	-	-	-	-	-	-	178	1	_	1
Mass Ave		4KV Switch Replacement	-	-	-	-	-	-	597	14	1,096	759
Mass Ave		Underground 4kv Circuit Cable Replacement	_	-	141	_	_	_	-			
Mass Ave		4kv Switch Replacement	-	-	- 141		-	-	218	-	-	
Mass Ave		4kV Switch Replacement	-	-	-		-	-	172	4	-	
Mass Ave		Underground A/C Network Secondary Replacement	-	-	-	-	-	-	285	-	-	-
Mass Ave		Underground Transformer Failure Replacement	-	-	-	-	-	-	56	-	-	-
Mass Ave		Underground Minor Reliability Improvements - Mass Ave	-	-	-	-	-	-	170	61	30	200
Mass Ave		Keep Costs Mass Ave	-	-	-	-	-	-	375	580	445	34
Mass Ave		Overhead 4KV Equipment Replacement	-	-	-	-	-	-	65	-	16	-
Mass Ave		Overhead 14KV Equipment Replacement	-	-	-	-	-	-	32	1	-	-
Mass Ave		Overhead Radial Second Replacement	-	-	-	-	-	-	24	1	1	-
		Overhead Service Replace - Mass Ave		-	_	_	-	-	20			_

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mass Ave		Overhead Minor Reliability Improvement	-	-	-	-	-	52	27	2	-	-
Mass Ave		Overhead Keep Cost Mass Ave	-	-	-	-	-	-	34	58	56	(1
Waltham		Underground 4KV Cable Replacement	-	-	-	-	-	-	292	-	-	40
Waltham	Waltham	Act of Public Authority Waltham	-	-	-	-	-	-	763	5	12	14
Waltham	Waltham	Waltham keep Cost	-	-	-	-	-	-	107	1	60	(
Waltham		Underground Transformer Failure Replacement	-	-	-	-	-	-	6	-	-	-
Waltham	Waltham	Overhead Circuit Walkdown Waltham	-	-	-	-	-	-	43	15	59	10
Somerville		Keep Cost Somerville	-	-	-	-	-	-	47	127	161	
Walpole	Walpole	Walpole Like for Like Replacement	-	-	-	-	-	-	103	6	351	1,1
Framingham		Framingham Like for Like Replacement	-	-	-	-	-	-	242	11	506	1,2
Somerville		Circuit Upgrades Somerville	-	-	-	-	-	-	59	2	315	1,5
Waltham		Overhead Service Replacement - Somerville/Waltham	-	_	_	_	-	-	63		-	-,-
Waltham	Waltham	Waltham Like for Like Replacement	_	_	_	_	-	45	80	1	677	1,5
Somerville	Somerville	Overhead Keep Cost Somerville	-	-	-	_	-	-	59	68	60	.,.
Various	Connortano	Underground 4kv Circuit Cable Replacement	-	-	-	_	-	-	26	-	-	1
Framingham	Framingham	Overhead Circuit Walkdowns Framingham	-	-	_	_	-	-	81	8	_	
Various	1 Taillinghain	Underground Radial Second Replace	-	_		_	-	-	7	-	-	
Various		Underground Transformer Failure Replacement	_	_	_	_	-	-	17		-	
					-				7		2	
Various	Malacia	Underground Minor Reliability Improvements - West	-	-	-	-	-	-	12	- 05		
Walpole	Walpole	Keep Cost Walpole	-	-	-	-	-	-		85	157	
Various	-	Overhead 4KV Equipment Replacement	-	-	-	-	-	-	161	19	53	
Various		Overhead 14KV Equipment Replacement	-	-	-	-	-	-	375	24	26	
Various		Overhead Radial Second Replacement	-	-	-	-	-	-	25	10	18	
Various		Overhead Service Replacement Framingham/Walpole	-	-	-	-	-	-	13	-	-	-
Various	ļ <u>.</u>	Overhead Minor Reliability Improvement	-	-	-	-	-	76	40	-	-	
Framingham	Framingham	Keep Cost Framingham	-	-	-	-	-	-	167	289	152	
Walpole		Overhead Circuit Walkdowns	-	-	-	-	-	-	-	389	6	
Framingham		Construct Framingham Minor Improvement Street	-	-	-	-	-	-	-	264	362	4
Walpole	Walpole	Construct Walp Minor System Improvement	-	-	-	-	-	-	-	-	141	4
Waltham		Construct Walt Minor System Improvrvements LOB Str	-	-	-	-	-	-	-	432	627	6
Various	Waltham	Construct Walt Minor Sys Improvements LOB Sta.	-	-	-	-	-	-	-	-	8	-
Somerville		Capital for Construction Maintenanc	-	-	-	-	-	-	-	30	131	
Framingham		Maint Fram / Walp / Walth LOB	-	-	-	-	-	-	-	194	192	1
Framingham		Maint Fra/Wlp/Wlt Tech Support	-	-	-	-	-	-	-	84	20	-
Various		Station Technical Support	-	-	-	-	-	-	-	-	725	1,7
Various		Police / Paving	-	-	-	-	-	-	5,062	3,789	7,088	9,2
Various		Asset Strategy Technical Support	-	-	-	-	-	1,598	875	1,898	2,322	2,5
Various		Prel Auth Trans	-	-	-	-	-	-	165	103	732	
		BECo Prelim Eng	-	-	-	-	-	-	-	-	-	1,2
Various		Records	-	-	-	-	-	21	2,193	1,466	1,496	1,8
Mass Ave		Upgrade Underground Residential Development	-	-	-	-	-	64	774	74	2	,
Mass Ave		Convert 4Kv to 13.8 Circuit 323-04 -06	-	-	-	-	-	-	519	168	25	
Mass Ave		PAR Convert 430-11&4	-	-	_	_	-	-	85	0	-	
Mass Ave		Convert Emmanuel College	-	-	-	-	-	-	579	745	42	
Mass Ave		Convert Primary Network Unit 24	_	_	_	_	-	-	1,916	814	19	
Mass Ave		Convert Circuit 277-04	-	_	<u> </u>	_	-	-	1,910	240	(3)	
Mass Ave	-	Convert Primary Network Unit 25	-	_	-	_	-	-	1,375	1,705	294	
Mass Ave	-	Convert 516-08 & 468-07	-	-	-		-	-	1,459	1,705	294	
Mass Ave		Convert 344-02	-	-	-	-	-	-	225	79	154	
		Convert Circuit 3603 loop system	-		-				102	60		3
Mass Ave			-	-	-	-	-	-	102		173	
Mass Ave Mass Ave	-	Convert 4Kv 13.8Kv 6004,344-05	-	-	-	-	-	-		302	534	1
		Convert 139-09	-	-	-	-	-	-	111	83	374	
Mass Ave	0 ""	Convert Circuit 277-01	-	-	-	-	-	-	8	21	493	
Mass Ave	Somerville	Retire Station 469, Somerville	-	-	-	-	-	-	2,920	984	85	
Mass Ave		Convert 4Kv to 13.8Kv Circuit 4301,4307	-	-	-	-	-	-	168	105	451	
Waltham		Station 285	-	-	-	-	-	-	76	223	724	2
Various		Construction	-	-	-	-	-	-	11	668	870	
Mass Ave		Mass Ave Like for Like Replacement	-	-	-	-	-	-	1,433	3,515	5,323	6,5
Mass Ave		Overhead Corrective Maintenance - Mass Ave	-	-	-	-	-	-	121	381	517	4
Mass Ave		Station Corrective Replacement - Mass Ave	-	-	-	-	-	-	186	1,744	650	
		Overhead Minor Reliability Improvement - Mass Ave	-	-	-	-	-	-	63	85	108	2
Mass Ave												
		Field Service Area1 System Capacity Improvements	-	-	-	-	-	-	58	66	162	9
Mass Ave Mass Ave Somerville	Somerville	Field Service Area1 System Capacity Improvements Somerville Like for Like Replacement	-	-	-	-	-	-	58 392	1,310	162 2,234	1,3

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various	Somerville	Station Corrective Replacement - Somerville	-	-	-	-	-	-	67	32	600	(22
Somerville	Somerville	Overhead Minor Reliability Improvements Somerville Ops Distr	-	-	-	-	-	-	4	62	16	12
Various		Underground Corrective Replacement - West	-	-	-	-	-	-	71	767	339	10
Various		Overhead Corrective Replacement - West	-	-	-	-	-	-	312	1,113	737	8
Various		Station Corrective Replacement - West	-	-		-	-	-	515	965	82	(93
Various		Overhead Minor Reliability Improvements - West	-	-		-	-	_	47	32	336	22
		Install New Transformer Sta. 470							-	1,122	1,582	4
Various			-	-	-	-	-	-				
Framingham		Rebuild Underground Residential Development-Edgewater Apts, Worc.Rd	-	-	-	-	-	-	-	249	133	18
Walpole	Westwood	Extend Circuit 148-H3 Westwood	-	-	-	-	-	-	-	439	163	5
Mass Ave		Relieve 548-92H	-	-	-	-	-	-	-	321	-	-
Mass Ave		Increase Capacity East	-	-	-	-	-	-	-	-	383	2
Waltham		Convert Stepdown Area	-	-	-	-	-	-	-	-	306	73
Mass Ave		MWRA C-H Pumping Sta, Brighton	_	-	-	_	-	-	-	(75)	-	
Mass Ave		New Balance Guest St, Brighton	-	-	-	-	-	-	-	54	34	
Mass Ave		BU New Station 508	_	_		-	-	5	97	294	78	
Mass Ave		Bland Plastic		-		-		1	368	28	95	
			-				-				95	
Mass Ave		Landmark Ctr	-	-	-	-	-	6	152	186	-	
Mass Ave		Laconia Condo	-	-	-	-	-	10	114	-	-	-
Waltham		Establish Secondary Network Vault 57	-	-	-	-	-	-	(33)	2	1	-
Framingham		Greenways Assisted Living	-	-	-	-	-	-	122	14	-	-
Framingham	Framingham	Framingham Triangle	-	-	-	-	-	-	18	14	2	-
Walpole	Hopkinton	EMC Corp Hopkinton	-	-	-	-	-	-	(9)	74	-	-
Mass Ave		Establish Secondary Network Vault 564	-	-	-	-	-	-	20	-	-	-
Mass Ave		Establish Terciary Network Vault 6217 A&B	-	-		-	-	_	37	3		
Mass Ave		Mission Main Phase 1	_	-		-	-	-	07	31	13	
			_						- 4		- 13	
Mass Ave		Establish Secondary Network Vault 509	-	-	-	-	-	-	4			-
Mass Ave		Establish Secondary Network Vault 57	-	-	-	-	-	-	2	1		
Mass Ave		BV Development / Underground Guest St.	-	-	-	-	-	-	2	(96)	26	-
Mass Ave		Butler St Relocation - MBTA	-	-	-	-	-	-	-	(82)	(146)	
Mass Ave	Boston	63-67 Endicott St Boston	-	-	-	-	-	-	203	164	-	-
Mass Ave	Boston	Markley Stearns 1 Summer St, Boston	-	-	-	-	-	-	203	358	9	
Mass Ave	Boston	MDA/Milennium Place 601 Wash St Boston	-	-	-	-	-	-	-	440	39	(
Mass Ave	Boston	Zade 112 Canal St, Boston	_	-	_	_	_	_	_	206	97	1:
Walpole	Walpole	Walpole High School	_	_		_	_	_	22	107	64	
	<del></del>	EMC 117 South St, Hopkington	+					-	17	394	67	_
Framingham	Hopkinton	·	-	-		-	-		17			
Waltham	Waltham	Customer Special Waltham	-	-	-	-	-	-	-	-	56	
Various		New Customer	-	-	-	-	-	-	87	8	280	
Various		Temporary Customer	-	-	-	-	-	-	1	2	-	-
Various		Remove Service	-	-	-	-	-	-	-	2	-	-
Various		Cable TV	-	-	-	-	-	-	-	4	4	-
Various		Overhead Services/Underground Services	-	-	-	-	-	-	-	-	1	-
Mass Ave		Customer Spec Authoriztion	-	-	-	-	-	-	-	-	78	1
Various		Con Electric Distribution Asset Strategy	_	_		-	_	_	_	-	119	4
v ui ious		Construct Phase 2 - 122 Line Rebuild	-	-		-	-	-	-		33	-
	-											
M A	-	Station Transformer Corrective Replacement Station 59	-	-	-	-	-	-	- 110	- 4	6	
Mass Ave	-	Station Breaker/Transformer - Mass Ave	-	-	-	-	-	-	119	4		-
Mass Ave		Operations North - Technical Support	-	-	-	-	-	383	818	(121)	24	
Various		Station Breaker/Transformer - Somerville/Waltham	-	-	-	-	-	-	-	16	-	-
Waltham		Technical Support Somerville/Waltham	-	-	-	-	-	142	490	(182)	1	
Various		Station Breaker/Transformer Fra/WP	-	-	-	-	-	-	210	2	-	
Various	İ	Technical Support Operations West/Planning & Scheduling	-	-	-	-	-	257	550	131	1	4,5
Mass Ave		Street Lighting - Mass Ave	_	_		-	-		-	(2)	16	
	+	New Customer - Mass Ave	-	-		_	-	3	1,517	6,029	7,195	11,0
Mana Aug	-		-	-	-							11,0
Mass Ave	-	Residential Development - Mass Ave	-	-	-	-	-	-	26	227	156	
Mass Ave	-	New Temporary Service - Mass Ave	-	-	-	-	-	-	64	148	339	3
Mass Ave		New Customer Mass Ave	-	-	-	-	-	3	813	548	130	1
		New Customer	-	-	-	-	-	-	-	-	-	
Mass Ave		Residential Customer Mass Ave	-	-	-	-	-	36	61	104	118	1
Mass Ave		New Customer Mass Ave	-	-	-	-	-	-	3	1	3	
Mass Ave		CATV Mass Ave	-	-		-	-	3	53	27	19	
Mass Ave	+	Overhead & Underground Services - Mass Ave	-	-			-		43	58	34	2
	+					-		59				2
Mass Ave	1	Underground Services - Mass Ave	-	-	-	-	-	22	12	13		
Waltham	Waltham	New Customer Waltham	-	-	-	-	-	-	-	761	2,046	1,7
Waltham	Waltham	Residential Development - Waltham	-	-	-	-	-	-	-	169	126	1

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Waltham	Waltham	New Temporary Service Waltham	-	-	-	-	-	-	-	85	11	1
Waltham	Waltham	Residential Customer Waltham	-	-	-	-	-	-	-	72	62	11
Waltham	Waltham	CATV Waltham	-	-	-	-	-	-	-	16	7	
Waltham	Waltham	Overhead & Underground Services - Waltham	-	-	-	-	-	-	-	63	54	4
Waltham	Waltham	Street Light Waltham Customer Operations	-	-	-	-	-	-	-	1	1	
Mass Ave		Mass Ave Technical Support	-	-	-	-	-	548	791	3,329	2,595	2,49
Mass Ave		Station Improvement - Mass Ave	-	-	-	-	-	-	7	-	-	-
Somerville	Somerville	New Customer Somerville	_	-	_	-	-	1	911	3,787	1,221	1,34
Somerville	Somerville	Residential Development Somerville		_	_	_	_		214	41	136	.,-
Somerville	Somerville	New Temporary Service Somerville	_	-	_	-	-	-	67	27	36	
Somerville	Somerville	New Customer Somerville	_	_	_	_	_	19	543	1	20	
	Somerville			-		-	-	43	74	42	17	
Somerville		Residential Customer Somerville  New Temporary Service Somerville	_		-						17	
Somerville	Somerville	1 1 7	-	-	-	-	-	-	5	-	- 40	-
Somerville	Somerville	CATV Somerville	-	-	-	-	-	42	44	10	10	
Somerville	Somerville	Overhead Services/Underground Service Somerville	-	-	-	-	-	41	65	55	25	
Somerville	Somerville	Underground Service Somerville	-	-	-	-	-	39	36	-	-	-
Walpole	Walpole	New Customer Walpole	-	-	-	-	-	-	-	401	682	7
Walpole	Walpole	Residential Development Walpole	-	-	-	-	-	-	-	4	187	1
Walpole	Walpole	New Temporary Service Walpole	-	-	-	-	-	-	-	11	16	
Walpole	Walpole	Residential Customer Walpole	-	-	-	-	-	-	-	29	32	
Walpole	Walpole	CATV Walpole	-	-	-	-	-	-	-	19	1	
Walpole	Walpole	Overhead Services/Underground Service Walpole	-	-	-	-	-	-	-	56	80	
Walpole	Walpole	Street Light Walpole Customer Operations	_	_	_	_	-	_	_	3	3	
Somerville	Somerville	Somerville Technical Support	<del>-</del>	_	_	_		524	592	1,118	576	5
Framingham		New Customer Framingham	-	-	_	_	-	15	555	744	983	7
					-							2
Framingham		Residential Development Framingham	-	-	-	-	-	3	158	780	448	
Framingham		New Temporary Service Framingham	-	-	-	-	-		2	31	27	
Framingham		New Customer Framingham	-	-	-	-	-	1	202	185	8	
Framingham		Residential Customer Framingham	-	-	-	-	-	15	27	20	16	
Framingham		New Temporary Service Framingham	-	-	-	-	-	-	15	1	-	
Framingham	Framingham	CATV Framingham	-	-	-	-	-	3	32	46	1	
Framingham	Framingham	Overhead Service Framingham	-	-	-	-	-	30	68	97	105	
Framingham	Framingham	Underground Service Framingham	-	-	-	-	-	88	86	2	-	-
Somerville	Somerville	Street Lights Somerville COP	-	-	-	-	-	-	-	6	3	-
Walpole	Walpole	Walpole Technical Support	_	-	_	-	-	_	-	1,034	921	4
Waltham	Waltham	Waltham Technical Support	_	-	_	_	-			917	901	5
Framingham		Framingham Technical Support	_	_	_	_	_	1,045	1,244	870	956	3
1 Tallingham	i ramingnam	Street Light Install & Relocate	-	-		-	-	8	178	558	1,116	5
Various		Modernizations			-		-	4	39			
Various			-	-	-	-	-			(2)	-	
Mass Ave		Removals	_	-	-			5	3	(2)		-
Various		No Current Minor St Lite Replace	-	-	-	-	-	539	318	24	-	-
Various		Com Technical Support	-	-	-	-	-	92	85	(14)	-	
Various		System Planning BECo	-	-	-	-	-	3,622	3,230	1,991	1,750	2
Mass Ave		Minor Capital Improvements Mass Ave	-	-	-	-	-	15	2,824	1,174	7,900	1,3
Various		Minor Capital Improvements Stations BECo	-	-	-	-	-	-	172	464	873	5,0
Mass Ave		Construction Mass. Ave. Act of Public Authority	-	-	-	-	-	-	494	850	1,249	
Mass Ave		Split Fiber Main Replacement	-	-	-	-	-	11	2,384	3,356	6,932	14,6
Mass Ave		Circuit Upgrades Mass Ave	-	-	-	-	-	1	860	257	48	
Somerville	Somerville	Minor System Improvement Somerville	-	-	-	-	-		747	391	21	7
Various - West	300111110	Construction Framingham / Walpole / Waltham Technical Support	_	_		_	_		208	-		
Walpole	Walpole	Walpole Act of Public Authority		-		_	-	-	200	11	83	
vvaipoie	vvaipule			-	-							
0		Technical Support - Mechanical Engineers	-	-	-	-	-	-	-	-	97	
Somerville		Zerolife - Various	-	-	-	-	-	-	-	-	1	
		BECo Facilities Construction	-	-	-	-	-	-	-	-	479	
		Atlantic Ave	-	-	-	-	-	-	-	-	274	
		Various Projects	-	-	-	-	-	-	-	361	-	
		Various Projects	-	-	-	(381)	67	65	(1,771)	(680)	1,258	
		Various Projects	-	-	-	-	-	-	-	-	(467)	1,
		Install Conduit Huntington Avenue	-	-	-	-	-	-	-	-	-	
		Cambridge Trust Co, Cambrdg St, Bos	-	-	-	-	-	-	-	-	-	
		Michelangelo St, Secondary Network Vault 496		_		-	_	-	-	_	-	
	-	EMC Engineering Building Hopkington	-	-	-	-	-	-	-	-	-	
	-		_									
		131 Dartmouth St, Terciary Network Vault 6218	-	-	-	-	-	-	-	-	-	:
		Overhead to Underground Canton Center	-	-	-	-	-	-	-	-	-	

Service Area	TOWN DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	Overhead to Underground - Westwood Center	-	-	-	-	-	-	-	-	-	525
	Overhead to Underground Natick Center	-	-	-	-	-	-	-	-	-	166
	Dedicated Line to Logan Airport	-	-	-	-	-	-	-	-	-	169
	Install Inoperative Relays at Stations	-	-	-	-	-	-	-	-	-	1,646
	Purch 115kV/14kV Mobile Transformer	-	-	-	-	-	-	-	-	-	871
	Retire PNU28 20N28, 23N28X/Y, 23N3	-	-	-	-	-	-	-	-	-	50
	4kV West Roxbury 284-08	-	-	-	-	-	-	-	-	-	(133)
	Increase Capacity W. Rox / Brooklin	-	-	-	-	-	-	-	-	-	2,028
	Reconfigure 304-77H	-	-	-	-	-	-	-	-	-	1,135
	REIT Two Line Station	-	-	_	-	-	_	-	_	-	258
	Internet 30 Innerbelt Road	-	-	_	_	_	_	-	_	_	2
	Rebuild Underground Real Estate Development - Chapel Hill	-	-		-	-	_	-	-	-	176
	Rebuild Underground Real Estate Development -Lord Chesterfield	_	-		-	_	_	-	_	-	47
	Underground Real Estate Development Rebuild Nagog Woods	-	-	_	-	-	_	-	-	-	38
	System Spare Transformer	-	-		-	-	_	-	-	-	1,063
	Relocate Conduit, MBTA Wash. St	-	-		-	-	_	_	-	_	726
	Establish Terciary Network Vault 6228 @ 10 Boylston St	<u> </u>	_		-	_	_	_	_	_	241
	Increase Capacity @ Station # 148	<del>                                     </del>	_		_	_	_	_	-	_	1,848
	Increase Capacity Trapelo Rd #450	-	-		-	-	-	-	-	-	1,040
	Install 3rd Transformer Sta #450				-	-	-	-		-	2,023
		-	-	-		-	-	-	-	-	
	Establish Secondary Network Vault 566 Chauncy St Boston	-			-						67
	OH Reconductor Circuit Walpole	-	-	-	-	-	-	-	-	-	7
	Provide New Supply Guiterrez Constr	-	-	-	-	-	-	-	-	-	122
	Increase Capacity Sta 148 Street Work	-	-	-	-	-	-	-	-	-	256
	Purchase of Tools Field Support	-	-	-	-	-	-	-	-	-	115
	Cathodic Protection	-	-	-	-	-	-	-	-	-	7
	Relieve Sudbury Station #342	-	-	-	-	-	-	-	-	-	244
	Relieve Woburn Station #375	-	-	-	-	-	-	-	-	-	43
	Relieve Natick Line Group	-	-	-	-	-	-	-	-	-	384
	Relieve Saxonville Line Group	-	-	-	-	-	-	-	-	-	143
	Improve Reliability Circuit 455-H1	-	-	-	-	-	-	-	-	-	167
	Reconfigure Circuit 146-H2		-	-	-	-	-	-	-	-	146
	Relieve Circuit 148-H3	-	-	-	-	-	-	-	-	-	203
	Improve Reliability of Circuit 23-H2	-	-	-	-	-	-	-	-	-	189
	Replace Underground Real Estate Development Cable in Indian Hill	-	-	-	-	-	-	-	-	-	143
	4Kv Modernization Project-13N29	-	-	-	-	-	-	-	-	-	120
	4Kv Modernization Project-14N29	-	-	-	-	-	-	-	-	-	145
	4Kv Modernization-17N29	-	-	-	-	-	-	-	-	-	92
	Replace Underground Real Estate Development Amberwood Drive	-	-	-	-	-	-	-	-	-	188
	BU New Indoor Track	-	-	-	-	-	-	-	-	-	153
	Convert section 17N33 Somerville	_	-	-	-	-	_	-	-	-	670
	Convert section 26N33 Somerville	_	-	_	-	-	_	-	_	-	82
	Reconductor 250-1N81H	-	-	_	_	_	_	-	_	_	235
	Replace Underground Real Estate Development Cable on Oak Park Drive	_	-		-	-	-	-	-	-	42
	Relocate Overhead Lines to Underground	_	-		-	-	_	-	_	-	116
	Increase Capacity Secondary Network Vault 46 Newbury St	<del>-</del>	-		_	_	_	-		-	251
	Establish Secondary Network Vault 233 Newbury St	<u> </u>	-			_	_	_		-	346
	Breaker Replacements Stations #329 & 250	-	-		-	-	-	-		-	10
	Relieve Chelsea-East Boston Region	-	-		-	-	-	-	-	-	593
		-			-	-	-				160
	Convert 4Kv Underground to 13.8Kv Circuit 293-03		-	-				-	-	-	
	4Kv South Boston Circuit 139-08	-	-	-	-	-	-			-	543
	Convert 4Kv Underground to 13.8Kv Circuit 143-05	-	-	-	-	-	-	-	-	-	483
	Transfer SO End Network #492-#106	-	-	-	-	-	-	-	-	-	116
	Convert 4Kv Underground Loop Circuit 396-08	-	-	-	-	-	-	-	-	-	363
	Relieve Boston Medical Line Group		-	-	-	-	-	-	-	-	222
	Reconductor Circuit 106-H4		-	-	-	-	-	-	-	-	12
	Convert 4Kv Underground to 13.8Kv Circuit 5203	-	-	-	-	-	-	-	-	-	3
	Convert 4Kv Underground to 13.8 Kv Circuit 5210	-	-	-	-	-	-	-	-	-	5
	Relieve NE Medical+Boston Herald LG	-	-	-	-	-	-	-	-	-	454
	Relieve South Postal Annex LG	-	-	-	-	-	-	-	-	-	226
	Relieve Park Plaza LG	-	-	-	-	-	-	-	-	-	264
	Convert 4Kv to 13.8Kv Circuit 139-01	-	-	-	-	-	-	-	-	-	798
	Convert 4Kv Underground to 13.8Kv Circuit 4308	-	-	-	-	-	-	-	-	-	6
	Station # 329 Duct Bank Projects	-	-	-	-	-	-	-	-	-	4,002
											, ,,,

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		Convert 4Kv to 13.8Kv Circuit 3615	-	-	-	-	-	-	-	-	-	551
		Convert 4Kv to 13.8Kv Circuit 506-12	-	-	-	-	-	-	-	-	-	691
		Convert Centre Street 4Kv to 13.8Kv	-	-	-	-	-	-	-	-	-	165
		Convert Washington Sq 4Kv to 13.8Kv	-	-	-	-	-	-	-	-	-	100
		New Station 496 Duct Bank	-	-	-	-	-	-	-	-	-	6
		Reconductor Line 13-1416XY	-	-	-	-	-	-	-	-	-	112
		RTU Upgrade Many Stations	-	-	-	-	-	-	-	-	-	329
		Station #455 Replace 115Kv Breakers	-	-	_	-	-	_	-	_	_	229
		115kv Breaker ReplacementSomerville	-	-	_	_	-	_	-	_	_	131
		CSPEC Nahatan St Westwood Ma	-	-		-	-	-	-		-	2
		Purchase Network Spare @ Station 71	-	-		_	-	_	_		-	1,135
		South Rd and Loomis St. Bedford APA	-	-		-	-	_	_		-	162
		Increase Capacity River St Line Group	-	_	_	-	-	-	-		_	124
		Transformer LTC Dielectric Monitors	-	-		_	_	_	_		-	60
		Conv to 13kV, Circuit 23N28X	-			_	-		-		-	55
		Increase Tie Capacity Station 396	-	-		-	-		_		-	264
		Lexington Station 34 Xfmr 14A+14B	-			-	-	-	-		-	608
				-					-			
		Install new Circt Relieve 13-01 -24	-	-	-	-	-	-	-	-	-	120
		Line Extenstion to Station 838	-	-	-	-	-	-	-		-	122
		Relieve Circuit 488-H1	-	-	-	-	-	-	-	<b>1</b>	-	404
		New Circuit to relv 320-H1 - H6	-	-	-	-	-	-	-	<b>1</b>	-	620
		Reconfigure 351-03 351-06	-	-	-	-	-	-	-	-	-	439
		Relieve Circuit 17-14	-	-	-	-	-	-	-	-	-	266
		Total Distribution	\$ 42,892	\$ 67,609	\$ 66,575	\$ 81,647	\$ 70,691	\$ 66,167	\$ 66,196	\$ 66,784	\$ 92,632	\$ 134,373
ransmission:												
Various		Install Shunt Reactor at Woburn & K-Street	-	-	-	-	-	-	-	35	3,116	73
Various	Medway	Station 446 Sound Reduction - Transformers 345 A&B	-	-	-	-	-	-	-	-	107	32
Various	Bellingham	ANP Station 446 Upgrade / Bellingham	-	-	-	-	-	-	-	27	808	
Various		Sithe Edgar Interconnection	-	-	-	-	-	-	-	-	11	_
Various		Enhance Downtown Relay	-	-	-	-	-	-	-	-	140	802
Various		Reconductor Line 282-507 Station 342 Sudbury to Station 282 Waltham	-	-	-	-	-	-	-	-	1,085	772
Various		Reconductor Line 282-507 Station 342 Sudbury to Station 282 Waltham	-	-	-	-	-	-	-	-	68	201
Various	Dover	Station 456 Relay Upgrade	-	-	_	-	-	_	-	_	126	-
Various	Cambridge	Engineering Special Blackstone #1 Generator	-	-	-	-	-	-	-	-	563	_
Various		Replace Autotransformer at Framingham Station Part 2	-	-		_	-	_	-	_	170	3,957
Various	Walpole	Replace Autotransformer at Walpole Station	-	_	_	-	-	-	_	_	30	2,674
Various	vvaipoic	Remote Thermal Units Upgrade Stations 446 - Medway, 211 - Woburn	-	-		_	_	_	_		117	2,014
Various		Static Wire Work, L320-507 - Waltham & Lexington	-	-		_	_	_	-		209	2
Various		Structure Replacement, 115 kV line - R/W 8-3 - Lexington & Burlington	-			-	-	_	_	<u> </u>	173	62
Various		ANP Blackstone 446 Worcester	-			_	-		-		5,077	- 02
Various	Waltham	Replace Transformer 230A	-	-		_	-		_		67	2,611
Various	Waltham	Install Phase Angle Regulating Transformer 110F - Station 282 Waltham	-	-		-	-		-		14	710
Various	vvaiillalli	Transmission - Develop Station				-	-		-		- 14	- 10
			(4)									
Various		2ND Medway - Millis 345-STA	(8)	1 241	- 1	-	-	-	-	-	-	-
Various	_	115kv Station - Andrew Sq	858	1,241	1 (1)	-	-	-	-	-	-	-
Various		Electric Transmission	- 4	- (4)	(1)		-	-	-	-	-	-
Various		Replace 115KV BK St	1	(1)	- 405	-	- 0.000	3	-	-	-	-
Various		Rebuild 240-507/8	-	-	135	-	2,239	(2)		<b>1</b>	-	-
Various		Medway-Framingham 115KV Tran	-	-	-	-	85	-	(61)	-	-	-
Various		Medway-Framingham 115KV Tran	1	336	450	-	-	-	-	-	-	-
Various		Spare Autotransformer	75	-	3	-	-		-	-	-	-
Various		Retire Obsolete Equipment - Edgar Station 75	-	-	21	585	46	100	-	-	-	-
Various		Replace Statistics SO TWR	10	(18)	-	-	-	-	-	-	-	-
Various		Enhance 115K Reliability Part 1	115	86	13		-	-	-	-	-	-
1		Reinforce Line 240-507&8 Transmission	24	65	167		-	-	-	-	-	-
Various		D.1.f I 040 F0700 Otalia	55	37	-	3	-	-	-	-	-	-
Various		Reinforce Line 240-507&8 Station										
Various		Station 150 Replace 115K Dis	52	(10)	10		-	-	-	-	-	-
		Station 150 Replace 115K Dis	52	(10)		-	-	-	-	-	-	-
Various		Station 150 Replace 115K Dis 115KV Supply Concord			10 (25)	-	-	-	-	-		
Various Various		Station 150 Replace 115K Dis 115KV Supply Concord Upgrade Lines 201-501	52 4 -	(10) 17 -	(25)	- - -	- 1	- (1)	-	-	-	-
Various		Station 150 Replace 115K Dis 115KV Supply Concord	52 4	(10) 17	(25) - -	-	- 1 -	-	-	- - -	-	-

Service Area	TOWN	DESC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Various		Trans Sec & Tie Bus	-	133	-	-	-	-	-	-	-	-
Various		Various Station Replace HCR Relay	-	-	12	97	10	3	-	-	-	-
Various		Install Pothead	-	10	152	-	-	-	-	-	-	-
Framingham		Replace PLC W/ FOC	-	128	356	-	735	292	13	-	-	-
Various		Install Transformer Reactors	-	-	32	-	(255)	4	-	-	-	-
Various		Auto Transformer	-	-	2,204	-	15	-	-	-	-	-
Various		Replace 115KV Line HOB	-	-	105	-	209	-	-	-	-	-
Various		Station 478 Pru FOC	-	-	23	-	16	6	-	-	- 1	-
Various		Spare Autotransformer	-	-	1,889	-	5	-	-	-	-	-
Various		Station 126 New 115.14K	-	-	130	-	211	2,734	28	-	-	-
Various		On Line monitoring	-	-	-	-	93	100	-	-	-	-
Various		Implement RCM (T)	-	-	-	-	19	-	-	-	-	-
		Station 274 Replace Cable	-	-	-	-	25	-	_	-	-	-
		Milford Trans 479 RE	-	-	-	205	4	-	-	-	_	-
Various		Milford Trans 479 / Station Work	-	-	_	-	289	2,009	87	2	(1)	-
Various		Station 385 - Capacitor Bank 115	-	-	-	-	249	40	-	-	- (.)	_
Various		Station 509 - Replace Autotransformer	-	-	-	-	101	2,299	130	-	_	_
Various		Enhance 115kv Relay		-			1,069	(18)	-		-	
Various		NEPOOL Comm Proj					158	12				-
			-	-	-	-	250			-	-	
Various	_	Transmission System Line Work	-	-	-	-	250 56	2 47	- 5	-	-	
Various	_	Transmission System Station Work		-							-	
Various	-	Cust Div Buildings	-	-	-	-	102	1	-	14	-	-
Various	O. dies	Station 240 Replace OCB 3	-	-	-	-	169	33	- 4	-	-	-
Various	Quincy	Backup to Quincy	-	-	-	-	22	19	1	-	-	-
Various		Replace Relays Station 514T	-	-	-	-	57	75	2	-	-	-
Various		Cathodic Protection L#292-522	-	-	-	-	1	99	3	-	-	-
Various		Replace Breakers	-	-	-	-	-	1,546	346	16	(2)	
Various		Replace LDAR Relay	-	-	-	-	-	142	-	-	-	-
Various		Station 280 Monitoring	-	-	-	-	-	126	3	12	-	-
Various		Station 250 Monitoring	-	-	-	-	-	60	60	-	-	-
Various		Digital Transient Recorder	-	-	-	-	-	124	141	-	-	-
Various		Install Oil Containment	-	-	-	-	-	300	90	(10)	-	
Various		Upgrade System Monitoring	-	-	-	-	-	82	20	-	-	-
Various		Enhance 115kv Relay	-	-	-	-	-	1,543	330	1	-	-
Various		Station 509 Replace 345B	-	-	-	-	-	-	2,286	36	-	-
Various		Replace Breaker 102 - Station 446	-	-	-	-	-	5	1	-	454	-
Various		Relaying Station	-	-	-	-	-	1,371	1,245	159	31	(
Various		Transmission System Line Work	-	-	-	-	-	139	7	-	-	-
Various		Transmission System Station Work	-	-	-	-	-	128	51	-	-	-
Various		Preliminary Authorization - Transmission	-	-	-	-	-	25	176	91	-	-
Various		Edgar Station	-	-	-	-	-	-	28	4	-	-
Various		Station Breaker Transformer	-	-	-	-	-	20	3	3	-	_
Various		Station 211 250		-		_	-	-	2,489	487	44	
Various		2nd Mystic to King	-	-	_	-	-	-	31	3,611	(287)	
Various		Station 514 TR 345B		-				-	1,313	4,756	126	-
Various	-	New 345kv Line 324		-	-	-	-	-	235	4,756	317	-
Various	-	115KV Shunt Reactor		-	-	-		-	13	1,383	62	
	-	ANP-Breakers at 446				-	-	-	104	833	246	
Various			-	-	-	-			54		161	_
Various	_	AND December 336 % Now Ten	-	-			-	-		181		
Various	-	ANP Recond 336 & New Tap	-	-	-	-	-	-	1,308	3,650	(46)	
Various		NEP 115kv Backup	-	-	-	-	-	-	2,043	886	318	-
Various		Upgrade 240-510, Station 110, 148	-	-	-	-	-	-	1	204	147	3
Various		New 345kv Line 324	-	-	-	-	-	-	4	1,464	32	-
Various		NEP 115kv Backup	-	-	-	-	-	-	16	862	-	-
Various		Upgrade 240-510, Lines Station 240 to 1	-	-	-	-	-	-	9	963	2,673	(1
Various		Upgrade 148-522, Station 447 to 148	-	-	-	-	-	-	169	1,208	942	
Various		Upgrade Line 148-522, Sta. Worl	-	-	-	-	-	-	-	872	53	
Various		Sithe Mystic Interconnection- Lines	-	-	-	-	-	-	-	-	3	-
various		Sithe Mystic Interconnection - Station	-	-	-	-	-	-	-	1	420	-
Various			-	-	-	-	-	-	-	3	-	-
Various Various		Interconnection Agreement Generation	-									
Various Various Various		Interconnection Agreement Generation Transmission Line Line of Business		- - -	- - -	-	-	-	84	393	265	7
Various Various		Interconnection Agreement Generation	-	-	-							7

Service Area	TOWN DESC	1	993	1994		1995	1996		1997	1998	1999	)	2000		2001	2002
	Upgrade 342-507 Line		-		-	-	-		-	-		-	-		-	40
	Upgrade 240-601 Line		-		-	-	-		-	-		-	-		-	218
	Upgrade Line 433-507		-		-	-	-		-	-		-	-		-	2
	Upgrade Line 282-602		-		-	-	-		-	-		-	-		-	649
	Upgrade Relays Line 319		-		-	-	-		-	-		-	-		-	110
	DTR Station #329		-		-	-	-		-	-		-	-		-	108
	Station 110 Replace Circuit Switches 115kv		-		-	-	-		-	-		-	-		-	194
	Sithe Edgar Interconnection															8,904
	Mirant Kendall															1,158
	Sithe Mystic Interconnection															8,226
	Sithe Mystic Interconnection															12,428
	Total Transmission	\$	1,328	\$ 2,0	25	\$ 5,677	\$ 8	92 \$	5,983	\$ 13,468	\$ 13,	146	\$ 27,180	\$	18,025	\$ 45,457
	Meters	\$	2,211	\$ 4,7	85	\$ 4,480	\$ 5	21 \$	\$ 4,414	\$ 1,325	\$ 10,	871	\$ 1,828	\$	2,172	\$ 6,364
	Overheads		30,281	30,4	155	28,723	10,8	21	10,248	11,945	16,	118	12,595		19,427	30,196
	Total Capital Spending	\$	76,712	\$ 104,8	374	\$ 105,455	\$ 93,8	81 \$	\$ 91,337	\$ 92,905	\$ 106	332	\$ 108,386	\$ 1	132,256	\$ 216,390

## **Boston Edison Company**

# Spare Component Acquisition & Inventory Policy and Practice

Year Ending December 31, 2002



Appendix 9

# **Boston Edison Company Spare Parts Policy and Practices March 1, 2003**

Boston Edison Company ("Boston Edison" or the "Company") monitors and manages critical items for its electric transmission system using a state—of-the—art computerized and integrated work management and inventory-control/procurement system. This new system was installed in 1999-2000, and provides for identification of common items needed for Boston Edison, as well as the operating systems of all of the NSTAR Companies (i.e., Boston Edison, Cambridge Electric Light Company, Commonwealth Electric Company and NSTAR Gas Company) (together the "NSTAR Companies"). In addition, Boston Edison's system inventories have been decentralized to bring materials closer to their point of use, decreasing spare-part requirements. Spare part requirements are periodically reviewed and updated by the Company to create efficiencies among and between the NSTAR Companies.

#### I. Electric Distribution System Spare Parts

The components of Boston Edison's distribution system are, for the most part, lower-cost and high-use items. Inventory levels are based on predicted numbers of: (1) replacements due to failure; (2) replacements due to wear, tear and obsolescence; and (3) new construction needs. Higher-cost, less-frequent turnover items, such as pad-mount switches, transformers, tapping and stopping equipment and regulators, are inventoried based on the same requirements.

In recent years, The NSTAR Companies have formed alliances with vendors of high-use items such as gas parts, distribution transformers, cable and overhead hardware. These alliances have proven very effective in assuring a continuous flow of high-quality components at a controlled price, as well as giving the NSTAR Companies priority treatment for emergency deliveries to cover natural disasters, which have the potential to drastically impact the system.

# II. Electric Transmission and Distribution Substation & Gas Take Station Spare Parts

Components at the substation level are much higher in cost, but much lower in number. The turnover of these components and the parts associated with them is also very low. Historically, there was a substantial inventory of substation spare parts, with very high carrying costs. Based on alternative methods for obtaining replacement parts, spare parts inventories were reviewed by Boston Edison, and as a result, substantially reduced.

Boston Edison has identified the following alternatives to maintaining a substantial inventory of spare parts:

• Establishing relationships with suppliers who maintain inventories of spare parts that can be obtained by Boston Edison on very short notice, as described above.

- Utilizing equipment on the Boston Edison system, which has been recently replaced or upgraded, for use as spare parts. Because of the large number of Boston Edison's ongoing projects, this option would provide a fairly continuous supply of spare parts.
- o Maintaining relationships with utilities that utilize similar equipment.
- o Employing the use of rebuilding kits.
- o Promoting redundancy in design and parallel feeds throughout the Boston Edison system to reduce the need for major component inventories.

For large critical components, dedicated spares are kept and replaced as used by Boston Edison. Specifically, the Company maintains a mobile transformer and mobile substations that can be placed in service in a very short time for emergency replacement of a major component.

# **Boston Edison Company**

## **Poor Performing Circuits**

Year Ending December 31, 2002



Appendix 10

## 2002 - Poor Performing Circuits

			Number of	•	
Circuit ID	Location	Reason(s) for performance	years performed poorly	Steps taken to improve performance	2002 SAIDI
36-07	Brookline	This circuit experienced several underground transformer failures, affecting approx 900 customers for each event, in 2002. These faulty transformers have been replaced. On April 25, 2002, there was a failure of a station transformer that has since been replaced at the station. The SAIDI driver for this circuit is the station event in Brighton during the Summer of 2001.	2	2001 – Infrared Survey and Repairs completed 2002 – Station transformer replaced in Brighton 2003/2004 - The circuit is scheduled for conversion to 13.8 kV	418.69
36-09	Brighton	This circuit experienced a cable fault and blown underground joint in January 2002. Repairs were made on these UG failures. On April 25, 2002, there was a failure of a station transformer that has since been replaced at the station. The SAIDI driver for this circuit is the station event in Brighton during the Summer of 2001.	3	2002 – UG circuit walkdown completed and repairs made 2002 – Station transformer replaced in Brighton 2003 - Underground sectionalizing planned with a new switch installation 2003 – New circuit tie to be installed to improve area reliability	381.41
36-10	Brighton Brookline	This circuit experienced several cable faults in 2002. All of these faults were repaired. On April 25, 2002, there was a failure of a station transformer that has since been replaced at the station. The SAIDI driver for this circuit is the station event in Brighton during the Summer of 2001.	2	2001 – Infrared survey and repairs completed 2002 – Station transformer replaced in Brighton	413.99
143-02	Roxbury	This circuit experienced several underground joint failures and cable faults in 2002.	2	2002 – UG cable and blown joint failures were repaired 2003 – 4kV Conversion capital plans to 13.8kV for this circuit	626.33
49-10	Boston	This circuit experienced three underground cable faults in 2002.	2	2002 – All underground cable faults were repaired 2003 – UG manhole inspections to be performed on this circuit	398.90
143-04	Roxbury	This circuit experienced three cable faults in 2002.	2	2003 – Underground manhole inspections planned 2003 - Underground sectionalizing planned	420.51

## 2002 – Poor Performing Circuits

Boston Edis	son Company				
Circuit ID	Location	Reason(s) for performance	Number of years performed poorly	Steps taken to improve performance	2002 SAIDI
59-02	Arlington	This circuit experienced several tree related events in 2002 and an underground cable fault event in August 2002 that affected 900 customers.	2	2003 - Circuit is part of the Rebuild Arlington Infrastructure capital project in which several 4kV circuits in Arlington are being rebuilt to improve area reliability and add new capacity to the area 2003 – Tree trimming planned	454.56
13-04	W. Roxbury	This circuit experienced a couple of cable faults and 2 blown underground joint failures in 2002.	3	2002 – Underground manhole inspections performed on this circuit in second half of 2002 and necessary repairs were made 2002 – Oil switch retrofitted	317.35
323-04	Roxbury, Dorchester	This circuit experienced 3 blown joint failures and a cable dig in event in 2002.	2	2001/2002 – Approx 60% of this circuit was converted from 4kV 2003 – Remaining 40% of this circuit is planned for 4kV conversion	271.48
67-03	Dorchester	This circuit experienced a few blown underground joints in 2002.	2	2003 – Underground sectionalizing planned for this circuit to improve reliability 2003 – Underground/manhole inspections planned for this circuit	269.76
375-H6	Woburn, Burlington	Several tree and squirrel related outages as well as underground feeder cable fault in 2002.	3	2003 - Overhead and underground circuit walkdowns planned 2003 – Tree trimming planned (part of this circuit was trimmed in late 2002 due to tree related incidents). 2003 - New circuit 375-H10 will reduce overhead exposure by approximately 50%	259.71
282-H8	Waltham	Several squirrel related events in 2002 as well as storm/lightning related outages on this circuit. In addition, there was a station event in July 2002.	2	2002 – Station wiring and upgrade completed 2003 - Overhead and underground circuit walkdowns planned 2003 – Tree trimming planned	150.68

## 2002 - Poor Performing Circuits

Boston Edis	son Company				
Circuit ID	Location	Reason(s) for performance	Number of years performed poorly	Steps taken to improve performance	2002 SAIDI
320-H6	Lexington, Lincoln	This circuit experienced several tree related outages early in 2002 but was trimmed in the latter part of the year to improve reliability. It also came out in December 2002 due to a loss of supply at Station 320 in Lexington.	3	2002 – Automatic sectionalizing unit installed on circuit late in year to improve area reliability 2002 – Tree trimmed to improve area reliability 2003 – Bus section insulation at Station 320 being upgraded and planned for completion by March 2003 - Overhead and underground circuit walkdowns planned 2003 - New circuit 320-H3 to be established in area and will reduce overhead exposure by approximately 50%	203.69
396-08	Roxbury	This circuit experienced a cable dig in event, affecting 500 customers, and a blown underground joint failure, affecting 500 customers, in 2002. The joints and faults were repaired. In addition, this circuit came out in 2002 due to a protective relay failure at the station. This station relay has been corrected.	3	2002 – Protective relay at the Brighton Station transformer was corrected 2002/2003 – A portion of this circuit was converted in 2002 and will be completed in 2003 2003 – 4kV conversion project plan	145.01
455-H1	Framingham	The majority of the outage events on this circuit have been due to trees and squirrels.	3	2002 - Installation of an automatic sectionalizing unit in late 2002 to further improve reliability 2003 - Overhead and underground circuit walkdowns planned 2003 – Tree trimming scheduled and as of Feb 2003, it is 40% complete and scheduled for entire completion by April 2003 2002/2003 – Project to reconductor several miles of the backbone of this circuit and improve circuit reliability	96.81
433-H6	Wayland, Natick, Weston	This circuit has experienced several tree and squirrel related events in 2002 as well as a couple of outages due to overhead equipment failures.	3	2003 - Overhead and underground circuit walkdowns planned 2003 – Tree trimming planned (the Wayland portion of this circuit was trimmed in 2002 due to outage events)	111.71

## 2002 – Poor Performing Circuits

Boston Edis	son Company				
Circuit ID	Location	Reason(s) for performance	Number of years performed poorly	Steps taken to improve performance	2002 SAIDI
416-H2	Acton	The large number of tree related outages drives the SAIFI for this circuit on this circuit in 2001. The circuit has been trimmed in 2002. This circuit has had a couple of poles hit by autos in 2002 as well as a tree related events during the Christmas 2002 snowstorm.	2	2002 – Tree trimmed	104.74
391-H2	Burlington	The SAIFI driver for this circuit is largely due to the station event of 2001. In 2001, there was a fire at station 391 in the switchgear in November. This circuit had an underground feeder cable fault on December 26, 2002 that affected over 600 customers. In addition, this circuit experienced a snowstorm related failure that same day during the Christmas storm that affected most of customers fed from this circuit.	3	2001/2002 – Station 391 Switchgear repaired 2003 – ASU installations planned for this circuit to improve reliability	59.97
375-H4	Woburn	This circuit came out in 2002 due to a station related event at Station 375 in December. It also experienced some outages in 2002 due to windstorms and snowstorms during the Winter 2002.	3	2002 – Infrared survey and repairs completed 2002 – Tree trimmed 2002 – New cable pit sump system installed in 2002 at Station 375 2003 – Switchgear roof membrane to be installed at Station 375 by April	1061.14
391-H7	Burlington Bedford	There have been several incidents due to trees and squirrels in 2002. There was also a pole struck by an auto in August 2002 that affected approx. 2500 customers for an hour. There was also an underground feeder cable fault in late November 2002 that affected 2500 customers.	2	2003 - Overhead and underground circuit walkdowns planned 2003 – Tree trimming planned	232.15

## 2002 - Poor Performing Circuits

Boston Edison Company								
Circuit ID	Location	Reason(s) for performance	Number of years performed poorly	Steps taken to improve performance	2002 SAIDI			
380-05	Arlington	This circuit experienced several tree related events in 2002 as well as overhead equipment failures, specifically transformers and downed primaries.	2	2003 - This circuit is part of the Rebuild Arlington Infrastructure capital project in which several circuits in Arlington are being rebuilt to improve area reliability and add new capacity to the area.  2003 - Tree trimming planned	713.99			
250-1N35H1	Somerville	This circuit experienced 2 cable fault events in 2002 in which approx 1300 customers were affected during each event.	2	2001 – Infrared survey and repairs completed 2001 – Tree trimmed 2001 – Overhead and underground circuit walkdown performed and repairs completed	148.10			
211-05	Winchester	This circuit came out several times due to overload conditions in 2002. In addition, it had an underground cable fault in March 2002. It also had a total circuit outage in 2002 due to a station event.	2	2001 – Infrared survey and repairs completed 2002 – New station procedures implemented	88.55			
59-1393H1	Arlington	This circuit experienced an event in November 2002 with the loss of the DSS supply line due to an underground cable fault as well as a few overhead equipment failures, specifically transformer and primary connection failures.	2	2001 – Infrared survey and repairs completed 2001 – Tree trimmed 2002 – Overhead and underground circuit walkdowns performed and repairs completed 2002 – DSS supply line UG cable fault was repaired	93.06			
274-H4	Framingham, Natick	This circuit experienced several tree and squirrel related events in 2002. In addition, it has had a couple of storm/wind events.	2	2003 - Overhead and underground circuit walkdowns planned 2003 – Tree trimming planned	87.89			

# **Boston Edison Company**

## **Staffing Levels**

Year Ending December 31, 2002



Appendix 11

1997	THI	⋜⋂	UG⊢	1 2002

#### STAFFING - TRANSMISSION AND DISTRIBUTION OPERATIONS

	1997	1998	1999	2000	2001	2002
Boston Edison Company						
Union	1,693	1,648	1,406			
Management	681	667	649			
NSTAR Electric & Gas						
Union				2,264	2,272	2,324
Management				919	914	889

Note 1: From 1998 to 1999 and 1999 to 2000 the Company offered a voluntary separation program offered as part of the merger with Commonwealth Energy System. During the period from August 1999 through August 2000, 635 employees from the Boston Edison and Commonwealth Energy System elected to participate in this program and exited the merged company. This was a program that was negotiated with the union leadership. Under the program, approximately 300 union and 335 management employees terminated their employment.

Note 2: With the merger of BEC Energy and Commonwealth Energy System into NSTAR Electric and Gas and resulting consolidation of operations, employees are no longer catagorized by or assigned to positions on the basis of the pre-merger operating company designations.

# Boston Edison Company 2003

### **Performance Benchmarks**

Year Ending December 31, 2002



Appendix 12

Boston Edison Company 2003 Performance Benchmarks

	Percent	Percent	Percent	Lost			Consumer	
	Calls	Service	On-Cycle	Work Day			Division	Billing
<u>Year</u>	<u>Answered</u>	Appt. Met	Meter Reads	<u>Accidents</u>	<u>SAIDI</u>	<u>SAIFI</u>	<u>Cases</u>	<u>Adjustments</u>
	(1)				(2)	(2)		
1992				1.16			1.803	177.26
1993				0.87			1.742	282.04
1994				1.10			1.608	304.48
1995	59.78%			1.37			1.478	342.21
1996	46.16%		84.92%	0.98			1.523	169.44
1997	79.98%		90.23%	0.77	100.40	1.070	1.776	255.71
1998	72.74%		92.46%	0.50	86.31	0.896	1.097	266.33
1999	69.20%		94.73%	0.73	101.21	1.060	1.087	206.88
2000	56.68%		94.81%	0.96	100.33	1.171	0.996	123.80
2001	57.11%		83.49%	0.76	146.77	1.330	2.292	114.75
2002	76.04%	88.30%	92.92%					
Mean	64.71%		90.51%	0.92	107.00	1.105	1.540	224.29
Std. Dev.	11.57%		4.59%	0.25	23.08	0.160	0.400	77.49
Max. Penalty	41.57%		81.32%	1.42	153.17	1.425	2.339	379.28
25% Penalty	53.14%		85.92%	1.17	130.09	1.265	1.940	301.78
25% Offset	76.28%		95.10%	0.67	83.92	0.946	1.141	146.80
Max. Offset	87.85%		99.69%	0.42	60.84	0.786	0.741	69.30

Notes (1) Based on 20 second threshold; includes abandoned calls.

<sup>(2)</sup> Exclusions based on events affecting 15% of operating areas